IDG

FLYING HIGH

Delta is scrapping its legacy systems as its $1 billion IT overhaul takes off. Page 31

OLD APPS, NEW WINE

The Wine project's goal is to make it possible to run Windows apps without Windows. Page 56



STAYING THE COURSE

FedEx's Steve Streitmatter (left) and others say a project *can* stay on track after a sponsor leaves. Page 35

COMPUTERWORLD

THE NEWSPAPER FOR IT LEADERS • WWW.COMPUTERWORLD.COM

JULY 31, 2000 • VOL. 34 • NO. 31 • $5 COPY



TAMING THE WIRELESS WILDS

SMART PHONES AND WIRELESS HANDHELDS are pouring into Fortune 1,000 companies at the same time the companies are experimenting with wireless LANs. Dr Pepper is even using wireless technology to monitor sales at vending machines. How can IT managers get control over this wirefree phenomenon? *Computerworld* offers ultrapractical advice from the pioneers on how to get started with wireless projects and the pitfalls to avoid. Big issues include security, standards, user policies and staff training in unfamiliar topics such as radio signals and interference. *Report begins on page 43.*



LINUX ON MAINFRAMES GETS CHEAPER

IBM says new hardware, software and pricing model driven by user demand

BY JAIKUMAR VIJAYAR

Call it a big-iroo boost for Linux.

IBM this week will introduce hardware, software and pricing features designed to make it cheaper for users to run Linux applications on their S/390 mainframes.

Key among the features is hardware called the Integrated Facility for Linux. It will let users of IBM's Generation 6 and Generation 5 mainframes add processor capacity exclusively for Linux applications without increasing charges for all other software on the server.

The feature removes a key obstacle to deploying Linux applications on mainframes, said analyst Tracy Corbo at Hurwitz Group Inc. in Framingham, Mass.

"I think it's a great way to leverage the power of the mainframe and not incur the traditional costs associated with mainframe software," she said.

Linux, page 14



KMART MOVES TO CATCH UP ON IT

Big dollars to go for long-needed upgrades

BY CAROL SLIWA

Even $670 million in technology and logistics investments this year won't change the hard reality that Kmart Corp. is facing an uphill battle trying to catch rival Wal-Mart, widely regarded as the leader in retail IT systems.

Retail analysts said the improvements Kmart committed itself to last week — including a new inventory management system and new scanners — have long been needed and are especially critical now that Minneapolis-based Target Corp. is nipping at Kmart's heels for the No. 2 spot behind Wal-Mart Stores Inc.

"There's been a lot of Band-Aiding, if you will, and the

Kmart, page 15

CIOs WARNED OF CELL PHONE RISKS

Corporate liability an issue, researcher says

BY BOB BREWIN
ARD JERRIFER DISABATIRD

CIOs need to ensure that their companies' employees operate cell phones and other wireless devices in a manner that reduces health risks associated with radiation — or face the legal consequences.

That's the advice of George Carlo, a public health researcher who spearheaded a three-year, $27 million research program for the cellular telephone industry on possible health risks associated with such devices.

Cell Phones, page 77

TRAVEL COMPANIES RACE TO INNOVATE

E-commerce, end of Y2k driving systems boom

BY MICRAEL MEEHAN

Travel companies, freed from the constraints of Y2k projects, have broken into a mad dash to implement new technologies.

Internet start-ups, established computer reservations systems and the world's largest airlines have all plunged into a frenzied development cycle that participants say is unrivaled in the history of their industry, if not all industries.

There have been partnerships to put a travel interface on corporate users' desktops; dot-com buyouts in bids for

Travel Industry, page 77

NEWSPAPER
UMI
UMI
PO BOX 994
ANN ARBOR MI 48106-0994

When It Comes To Security, Only *e*Trust Can Protect You Like This.



Security is the number one concern of every IT professional. The good news is that there's a proven solution you can trust.

Without Bullet-Proof Security, Successful eBusiness Is Impossible

The only thing bigger than the opportunity that comes with putting your business on the Web is all the risk that goes with it.

Undetected attacks can strike at any time, from anywhere, in a variety of forms. Most sites can't even track every attempt. And new threats are developed every day, all over the world.

Without the right protection, eCompanies risk losing everything: data, customers, revenue, and more.

A Simple Solution To Your Most Complicated Challenge

Online business through eCommerce, corporate intranets, partner-to-partner transactions on extranets and websites, all need to be secured. Protecting the integrity and availability of intranet information is critical to all organizations.

Unfortunately, in the race to become Web-enabled, security has taken a back seat. IT managers often give themselves a false sense of security with a standalone or partial security solution. They forget that eCompanies need an integrated and comprehensive security solution that provides best-of-breed functionality.

*e*Trust Enables eBusiness

eTrust™ provides all the security solutions an eBusiness needs:

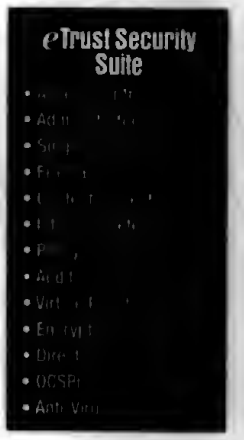
COMPREHENSIVE — From the browser to the mainframe, ensuring complete security in today's highly complex environments.

BEST-OF-BREED — eTrust solutions offer best-of-breed functionality across the board

INTEGRATED— All eTrust solutions are designed and built to work together seamlessly.

EASY — eTrust solutions are easy to use, deploy, and administer, ensuring any environment is secured quickly and correctly.

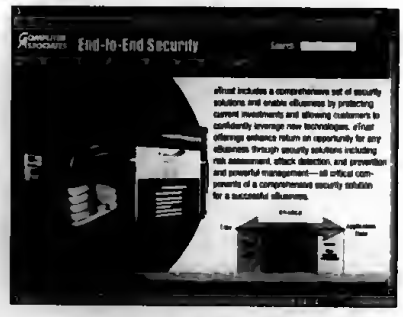
MISSION-CRITICAL — eTrust solutions offer the scalability, depth, and robustness fast-growing and successful eBusinesses need.



*e*Trust Is Open And Extensible

eTrust allows you to leverage existing investments in security solutions — you will never have to start over or convert anything. And eTrust can be implemented one function at a time or all at once — it's your choice.

And since eTrust is built on the Unicenter TNG® Framework,™ it lets you snap-in other eBusiness management solutions as you grow and your needs change. eTrust is built on a standards-based, open infrastructure, so it's always easy to plug in any other standards-compliant products or solutions.



*e*Trust Is Trustworthy

eTrust is not only backed by the world's leading security software company,* it is also complemented by a complete set of outcome-based service offerings. CA Services™ stands ready to make sure your implementation is fast and trouble-free.

If your company is making the difficult transition to an eBusiness, you owe it to yourself to find out more about the security solution more eBusinesses trust.

For more information, call 1-800-377-5327, or visit www.ca.com/solutions/enterprise/etrust/

COMPUTER® ASSOCIATES
Software superior by design.

*e*Trust™

Backed By The #1 Security Software Company

Assess Manage Protect Detect Enable

© 2000 Computer Associates International, Inc., Islandia, NY 11749. All trademarks, trade names, service marks, and logos referenced herein belong to their respective companies.
*According to "Internet Security Software: 1999 Worldwide Markets & Trends," by IDC

THE WEB JOB SEARCH

When "Brad Martin" decided to climb out of the world of help desk support, he left his job, signed up for unemployment and spent five weeks surfing the Web to land the right gig. Find out what you can expect as an online job seeker.
Page 36



SURVIVAL SPIN-OFF

To survive the growing use of electronic documents, paper-form manufacturer Standard Register spun off its e-commerce group into Smartworks.com, a software print-management application service provider, explains Jeff Allen, the firm's vice president of sales and marketing and former director of e-commerce at Standard Register. **Page 30**



COMPUTERWORLD THIS WEEK

JULY 31, 2000

NEWS 4

4 NAPSTER LOSES in court, setting the first of many potential precedents protecting intellectual property online.

6 RETAILERS SETTLE with the FTC over charges stemming from delays in shipping last year's holiday orders.

8 FEDEX LAUNCHES an integrated e-commerce package, seeking more shipping business; IBM, Ariba and others also debut offerings.

10 WEB SERVER OFFERS ability to personalize sites based on customer behavior, not preferences.

12 MICROSOFT PUSHES for a midlevel appeals court review before its antitrust case goes to Supreme Court.

15 AOL COMPETITORS challenge its dominance in instant messaging with interoperability standard and demand that it play nice for customers.

17 PRIVACY TOPS agenda of oewly appointed commerce secretary, who must set e-commerce standards.

20 SERVICES AUCTION debnts from Collab.Net and Oracle to market application development and support.

MORE

Editorial/Letters..... 24, 25
How to Contact CW..... 76
Shark Tank..... 76
Stock Ticker..... 75
Company Index..... 76

BUSINESS 27

30 CONGRESS WEIGHS legislation requiring companies to notify employees of all electronic communications monitoring.

31 DELTA AIR LINES BEGINS rolling out IT advancemeots in a massive systems overhaul.

31 GOVERNMENT WARNS banks of schemes by crackers to spoof Web sites and steal customers' information.

WORKSTYLES

34 PETSMART.COM'S IT workers not only feel comfortable e-mailing the CEO, they also feel comfortable shooting rubber bands at him, says the chief technology officer.

35 IT PROJECTS CAN still survive even after key business sponsors leave the company.

QUICKSTUOV

38 MANUFACTURING execution systems can help deliver informatioo from the factory floor to plant managers in real time.

TECHNOLOGY 51

52 DEMOCRATS PLAN gavel-to-gavel webcasts of their nominating convention.

52 SGI'S LATEST workstations deliver high performance and flexibility for users through a new modular architecture.

54 COMPUWARE ACQUIRES Optimal Networks, hoping to make it easier to track application performance.

55 IBM UNVEILS a commercial versioo of its ASCI White supercomputer.

QUICKSTUOV

56 QUALITY OF SERVICE can organize resources to assure that important transactions get priority.

FUTURE WATCH

57 DATA VISUALIZATION can help you picture the information for which you're searching.

58 OPEN-SOURCE developers are figuring a way to run Windows applications without the Windows operating system.

This Week Online

■ This week on **Computerworld.com** read the latest installment of our popular **Security Manager's Journal** on the **Security Watch** page and news from the **Black Hat Briefings** security conference in Las Vegas.

■ On the **E-Commerce pages**, see how **Away.com** sends 15 millioo opt-in e-mails per month, and learn about how **Procter & Gamble** better manages its contracts with business-to-business software.

OPINIONS

24 MARK HALL writes that the days of having to constantly upgrade PCs are gone.

24 DAN GILLMOR says ICANN's slow and steady approach to opening the domain-name system is slowing progress on the Internet.

25 MICHAEL COHN offers a simple — yet humorous — test to see if you're happy with your job.

26 BARBARA ANTHONY and Thomas Cohn of the FTC explain the agency's new guidelines on Internet advertising.

26 THORNTON MAY writes that IT can play a key role in the new model for marketing.

34 JIM CHAMPY says the IT services industry is taking a breather to ponder the changing business landscape brought oo by the Internet.

78 FRANK HAYES writes that the success of an IT project team lies in a mutual sense of trust between techies and end users.

AT DEADLINE

Dow Cracks Down On E-Mail Abuse

A two-month investigation by The Dow Chemical Co. resulted in the firing of about 50 workers during the past two weeks for sending explicit pornographic images through the company's e-mail system. The chemical manufacturer disciplined another 200 workers for distributing, downloading or saving pictures that were either pornographic or violent in nature, said Eric Oates, a spokesman for Dow's operations in Midland, Mich., where the firings and disciplinary actions took place. The investigation was sparked by complaints from an employee.

Exchanges Submit Decimalization Plan

The major stock exchanges and the National Association of Securities Dealers Inc. in Washington last week submitted a detailed plan for phasing in decimal-based pricing of securities. Under the plan, 13 stocks and related options listed on the New York Stock Exchange are scheduled to begin being priced in decimals Aug. 28. If all goes as planned, decimal pricing will be expanded to another 50 to 100 stocks on Sept. 25, with all other exchange-listed stocks following as early as December.

Corrections

- Due to a production error, the photos of two thin-client devices were transposed in "Thin Is In" (Technology, July 10). The Wyse Technology Inc. Winterm 3350SE is shown in the top photo; the Neoter Technologies Inc. NetXpress XL2000 is shown in the bottom photo.
- Due to a reporting error, "Developers Voice .Net Skepticism" (Page One, July 17) incorrectly stated the platforms Microsoft .Net will run on. It will run on both 32- and 64-bit operating systems.
- Due to an editing error, "Napster Gaffes" (Hack of the Month, Technology, July 17) misspelled the name of the Back Orifice Trojan horse software.

Napster Ruling Reaches Beyond Music Industry

Court order has implications for all online copyrighted works, experts say

BY JULIA KING

LAST WEEK'S legal blow against online music distributor Napster Inc. is still reverberating among music lovers. But the federal court order also has serious implications far beyond the music business, according to intellectual-property experts.

Some said U.S. Judge Marilyn Hall Patel's ruling last Wednesday ordering Napster to halt the trading of copyrighted material over the Internet helps shut the door on the free exchange of all copyrighted content online.

"If you are a Web site that plays a role in the exchange of any kind of copyrighted materials — whether it's film, books or audio — you should study the Napster preliminary injunction very closely," said Rich Gray, an intellectual-property attorney in Menlo Park, Calif.

Like other observers, Gray said he believes the Napster ruling and the planned appeal are merely the first in a string of legal battles over copyrights that will ensue between traditional media companies and Internet file-sharing software and services companies such as Gnutella.com and Warpster.com.

The Motion Picture Association of America in Encino, Calif., has already filed a copyright infringement suit against Scour Inc., an Internet company in Beverly Hills, Calif., that offers a Napsterlike file-sharing service for movie buffs.

Sending a Message

The ruling against San Mateo, Calif.-based Napster stems from a lawsuit filed last December by record companies represented by the Recording Industry Association of America (RIAA) in Washington. The association charged the 14-month-old music company with violating federal and state laws through "contributory and vicarious copyright infringement."

Napster software allows users to log on to its servers and make their personal MP3 collections available for download by other users. Since the company's launch late last year, an estimated 20 million people have used Napster software to download MP3 music files.

But Patel's ruling specifically enjoins Napster from "assisting or enabling or contributing to the copy or duplication of all copyrighted songs and musical compositions of which the plaintiffs hold rights."

Cary Sherman, the RIAA's senior executive vice president and general counsel, said that record companies are pleased with the ruling.

"This once again establishes that the rules of the road are the same online as they are offline and sends a strong message to others that they cannot build a business based on others' copyrighted works without permission," Sherman said in a statement.

What the ruling doesn't change and can't stop is the availability of free music on the Internet, according to Doug Milles, an executive at online music company New York-based EverAd Inc.

EverAd's approach differs from Napster's in that it embeds banner ads in digitally encoded music it licenses from record labels and then distributes the music free of charge — but with advertising — at its site, *www.playj.com*.



NAPSTER CEO Hank Barry will attempt to appeal the ruling

"Napster was saying early on in its mission statement things like 'We're going to take down the labels.' It's hard to backpedal off of that," Milles said. "If they had kinder, gentler goals, they might have had a kinder [court] settlement today."

Old IDs Never Die; They Just Cause Trouble

Automated updates may cut security risk

BY JAMES COPE

While many information technology managers lock down access through firewalls, virtual private networks and encryption, a few are tackling a more mundane threat: how to quickly grant and withdraw network access rights for their employees.

The problem has existed for years but is becoming more urgent, some analysts said, because of rapidly changing job roles and high turnover.

"You have to add people quickly so they can be productive right away," said Cliff Reeser, director of system security at ETrade Group Inc. in Menlo Park, Calif. "But because technicians are so busy adding people, the deletion of users when they leave never gets done.

"I literally found thousands and thousands of people still on these systems that shouldn't be there. Their user IDs, passwords, access to databases — all of it was still there," Reeser said.

Some 30% to 60% of the access profiles in large corporations are no longer valid, according to Chris Christiansen, a security analyst at International Data Corp. in Framingham, Mass. Unused user IDs, passwords and remote access permissions are a magnet for even amateur hackers, he said.

Although vendors of confined, single-platform systems can more easily manage user access from a central console, deleting users in IT environments that operate across multiple platforms, like ETrade's, involves a lot of manual work.



OMAHA PUBLIC POWER plant cut IT costs using enRole, which automates employee access rights

But Christiansen said a new application Reeser and some other IT managers are using is the first tool he's aware of that automates the granting and revocation of access rights across multiple platforms in a client/server environment.

The product, enRole from Irvine, Calif.-based Access360, uses network policy information — such as who has access to which applications, user IDs and password instructions — to automatically set access rights for new users. It also deletes profiles of those who should no longer have access.

The Omaha Public Power District, which started using enRole more than a year ago, has cut costs with the tool by giving contractors access rights more quickly, according to network manager Jeff Groves. Otherwise, it could cost the company $500,000 per day in downtime if contractors had to wait for access during the maintenance and refueling of a nuclear plant, he said.



Incredible

i-business

Information Builders

www.informationbuilders.com
1.800.969.INFO

Seven Online Retailers Fined For Late Holiday Deliveries

Vow to prevent a repeat of problems this year

BY MICHAEL MEEHAN

BY LEVYING a total of $1.5 million in fines on seven online retailers for failing to meet promised product shipment schedules last December, the U.S. Federal Trade Commission (FTC) last week made it clear that Santa Claus must deliver gifts when companies say he will — or else.

The FTC said the seven companies agreed to pay the civil fines to settle charges that they violated a rule by providing buyers with inadequate notice of shipment delays and by "continuing to promise specific delivery dates when timely fulfillment was impossible."

The companies are CDnow Inc., KBkids.com LLC, Macys.com Inc., The Original Honey Baked Ham Company of Georgia Inc., Patriot Computer Corp. and Toysrus.com Inc., as well as the now-defunct Minidiscnow.com.

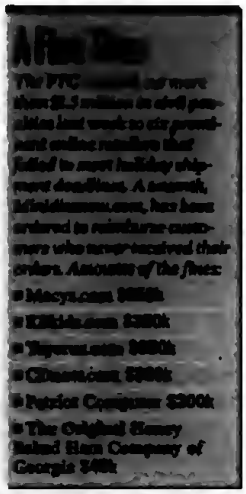
In addition to paying the penalties, the six retailers still in business promised to make changes to their shipping policies to ensure that similar violations don't happen again this year, the FTC said.

Preventive Measures

The commission said it undertook an investigation of the companies last December after receiving numerous complaints from consumers. The investigation found that all seven companies failed to send delay notices and offer online shoppers the opportunity to cancel their orders, as required by the FTC's Mail and Telephone Order Rule. KBkids.com, Macys.com, Toysrus.com and Minidiscnow.com were also found to have taken orders even though they knew they couldn't meet promised shipping schedules, the FTC said.

David Cooperstein, an analyst at Forrester Research Inc. in Cambridge, Mass., called last December's shipping delays a symptom of a booming Internet economy. He said similar problems occurred in 1997 and 1998 and that the number of online shoppers is expected to more than double during this year's holiday season.

Toysrus.com said in a statement that it "made every effort to act fairly and in the best interests of our customers." Efforts to obtain comments from the other retailers in response to the FTC settlement were unsuccessful.



Judge Puts Off Toysmart Data Sale Ruling

BY LINDA ROSENCRANCE
BOSTON

U.S. Bankruptcy Court Judge Carol Kenner last week tabled Toysmart.com Inc.'s controversial plan to sell its customer information until she can hold a hearing on a proposed settlement deal between the defunct online toy retailer and the U.S. Federal Trade Commission (FTC) — a deal Kenner said she's likely to reject.

At a hearing on Toysmart's request for approval to go ahead with the sale of its remaining assets, Kenner said she would have to schedule a separate hearing to consider the agreement reached by the Waltham, Mass.-based company and the FTC. The agreement, which would settle a lawsuit filed by the FTC over the planned sale, would allow Toysmart to transfer its customer list and related information to another company only under limited circumstances.

Kenner didn't set a date for the hearing on the proposed settlement. But while vowing to keep an open mind on the issue, the judge said she's unlikely to approve the deal, in part because of objections to the proposed customer-data sale and to the settlement agreement filed by the attorneys general of 41 states.

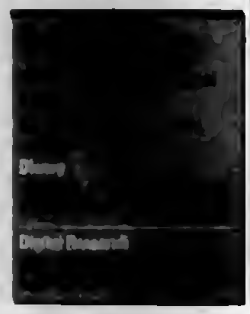
A group of attorneys general representing 39 of the states last week vowed to proceed with efforts to block any sale of Toysmart's customer list despite the FTC's settlement. The group was joined by officials from New York and Texas who also objected to the sale.

The deal reached between Toysmart and the FTC would allow the sale of the customer data only to a "successor" family-friendly firm that agreed to step in and buy the company's entire Web site.

But the states contend that the FTC's proposal should include notification to consumers who provided personal data to Toysmart, as well as a process for customers to decide if they want their information to be sold to a third party.

Truste, a San Jose-based organization that awards a seal of approval to companies that promise to adhere to online privacy guidelines it has developed, also filed an objection to Toysmart's plans with the bankruptcy court. Truste had given a seal to Toysmart.

At last week's hearing, Toysmart declined to accept either of the two bids for its customer list — $50,000 from The Walt Disney Co., which owns a 60% stake in Toysmart, and $15,495 from Digital Research Inc. in Kennebunk, Maine.



BP Amoco to Launch Net-Ready Gas Pumps

Effort aims to boost BP's image, earnings

BY JULIA KING

Petroleum giant BP Amoco PLC will spend $200 million over the next two years to outfit 28,000 gas stations worldwide with Internet-ready gas pumps customers can use to check directions, book a hotel room or even order a ham sandwich while they fill their tanks.

The technology overhaul, which is part of a larger rebranding campaign aimed at spiffing up the London-based company's image, will allow drivers to pay online for gas and snacks before or during a visit to a BP Amoco gas station.

"We think these new [Internet-ready gas stations] will enable us to accomplish our goal of a 10% increase in earnings," said a BP spokeswoman in New York. "The goal is to have half of revenues come from retail and half from gas. Right now, that mix is about 80% [gas] to 20% [retail]."

BP said the first refurbished BP Connect stations will open later this year in Cleveland and Indianapolis. But exact system implementation plans remain unclear, officials said.

The Internet-ready pumps will have touch screens customers can use to select made-to-order sandwiches or pastries online. Once customers have finished filling their tanks, their orders will be ready inside the store.



BP CUSTOMERS will be able to order food at pumps like these

Analysts said BP's plans to increase its nongasoline revenue are in line with an industry trend toward product diversification. Other big gasoline retailers sell everything from gourmet coffee to clothing. Irving, Texas-based Exxon Mobil Corp. sells goods like these in its On The Run stores.

But some analysts questioned whether Internet access will bolster sales or attract new customers to BP pumps.

"I don't know of any other gasoline marketing company that has this plan as far along as BP Amoco, but how much money they make on it is another question," said Alvin D. Silber, an analyst at Herzog, Heine and Geduld, an investment bank in New York. "I'd expect the price [of gas] at the pump to be more important than having Internet access."



Take me

to the network where Speed meets Performance.

Jamie Thingelstad - Chief Technology Officer, MarketWatch.com
"AT&T provides us with expert solutions to meet our data, web hosting, transport and voice needs - all from one company. We no longer have to juggle multiple vendors to get our services to customers."



Bypass all the Net congestion. CBS MarketWatch.com, ranked the #1 online financial news provider by Media Metrix,* saw its bandwidth consumption increasing by one percent per day. They needed a single provider offering faster, larger and more reliable IP, data and web hosting capabilities with the highest level of security for users. **AT&T Data & IP Services** provided a solution of high-speed **Internet connectivity, dedicated server hosting, ATM** and **private-line frame relay services**. And with the new **AT&T Ecosystem for Media** supporting an entire spectrum of digital media applications, media and entertainment companies can create, manage and distribute digital audio and video over the public Internet or a private network. CBS MarketWatch.com now delivers nearly ten million pages of financial data and news each day to approximately a half million people around the world. If your company needs speed and performance without the Net congestion, let AT&T take you there - **now**.

AT&T

Data & IP Services | 1 800 ATT-3199 | www.att.com/business_services

* Source: Media Metrix, May 2000

BRIEFS

AOL Suit Dropped

The National Federation of the Blind last week dropped its lawsuit against Dulles, Va.-based America Online Inc. after the company agreed to make its Internet browsing software and content compatible with screen-reading programs used by people with visual impairments. "For years, the AOL software has been inaccessible to the blind," said Curtis Chong, director of technology at the Baltimore-based organization. "They have agreed that the next version of AOL software [Version 6.0] will be compatible with screen-access technology." The new software is set for a fall release, he said.

Senators Propose Web Data Privacy Bill

Joining the debate over the potential regulation of data privacy on the Internet, a bipartisan group of U.S. senators last week proposed a bill that would require Web sites to post clear and concise information about their policies for using the personal information they collect from online shoppers and other individuals. Under the provisions of the bill, companies would have to disclose exactly who is collecting the information, how it will be used, the type of data being collected and whether consumers have to provide personal information in order to use a Web site. Companies would also have to secure information once it's in their databases.

Symantec to Acquire Axent for $975M

In a move that would combine two security software vendors, Symantec Corp. last week announced a deal to acquire Axent Technologies Inc. in a stock-swap transaction valued at about $975 million. John Thompson, chairman and CEO of Symantec in Cupertino, Calif., said in a statement that the purchase of Rockville, Md.-based Axent "is a major step forward in aggressively implementing our enterprise strategy." The combined company is expected to have total revenue of about $1 billion for the fiscal year ending next March, with more than 60% coming from corporate users, Symantec said.

Mom-and-Pop Shops Gain Clout on Web

Expected to hit $120B online by next year

BY JULIA KING

FORGET THE Fortune 500. Internet veodors are setting their sights on the little guys — small and medium-size companies that e-commerce experts estimate will register nearly $120 billioo in annual online trade by next year.

Last week, Mountain View, Calif.-based Ariba Corp. and IBM teamed up to launch software and services that automatically connect midsize suppliers' Web sites with multiple buyers and digital marketplaces on Ariba's Commeree Services Network.

Memphis-based Federal Express Corp. announced eCommerce Builder, which it bills as a full-service Internet platform designed to make it easy for small businesses to build online stores.

But what is FedEx doing in the systems integration business?

It's a natural revenue enhancer, since the service is integrated with the firm's logistics and shipping functions, said David Roussain, FedEx's vice presideot of e-commerce.

"We anticipate that small businesses will opeo stores using our e-commerce builder and extend their markets," he said. "By allowing them to sell their wares, they'll use [more] of FedEx's shipping services."

Meanwhile, Internet systems integratioo start-ups, such as Fremont, Calif.-based Sierra Atlaotic Inc., are offering a variety of "e-business frameworks," or reusable software components designed primarily to help traditional brick-and-mortar firms quickly launch an Internet presence that has ties to back-end systems.

What characterizes all the new offerings is a high level of software package preintegration, which analysts said works to speed implementations at firms that typically have limited information technology expertise. "In the past, a lot of solutions worked, but they were very expensive, so they never hit the small and medium-size market," said Andy Efstathiou, an analyst at The Yankee Group in Boston.

These new offerings, in contrast, are much more affordable for smaller companies, which are increasingly rep-



FEDEX'S ROUSSAIN: Systems integration is a natural revenue booster

resenting a larger piece of the e-commerce pie.

Giga Information Group Inc. in Cambridge, Mass., projects that 2.2 million small companies will be conducting business online by 2002, compared with 385,000 a year ago.

Until now, a lack of in-house IT support and high up-front costs have been among the top five barriers delaying small companies from launching e-commerce sites, according to Access Markets International Partners, a New York-based consulting firm.

At $50,000 for hardware, software and services, the IBM/Ariba offering is "really pretty cheap," noted analyst Mitch Kramer at Patricia Seybold Group in Boston.

Shelley Boxer, vice president of finance at MSC Industrial Direct Co., an $800 million supplier of industrial components in Melville, N.Y., estimated that it will take less than a week to tap into new online marketplaces using the IBM/Ariba software. "Before, we had to do specific programming and setting up with each customer, so this will also cut costs," Boxer explained.

Avi Lerer, a partner at Wabash Diamond Co. in Chicago, a $5 million firm that specializes in diamond engagement rings, is using the FedEx site-building tools to launch an e-commerce site called MyDiamondGuy.com.

"I am very skeptical about selling diamonds over the Internet, but people are looking for information on the Web. We're just trying to feel our way," he said. And at $29.95 per month, it's affordable. ◗

FTC Probe of Automotive Exchange Continues

Covisint founders stick to launch plan

BY LEE COPELAND

Officials at the Big Three's automotive trade exchange, Covisint, confirmed last week that the U.S. Federal Trade Commission (FTC) has initiated another round of inquiries into the proposed company. But its founders said they remain optimistic that the online marketplace will still launch according to schedule.

The latest inquiries focus oo the technology infrastructure of the Detroit-based online exchange.

"The FTC wants to know how the technology works," said Daniel Wecker, vice president of Commerce One Inc. in Pleasanton, Calif., the technology partner General Motors Corp. brought into Covisint. "There haven't been a lot of B2B exchanges, and the FTC is trying to build guidelines."

Wecker added that the request for more information wasn't uoexpected and that "the clarifying questions [the FTC] asked will oot have an impact oo the business plan." The company expects to stick to its Sept. 30 launch date, Wecker said.

Covisint originally filed documents detailing its business plan at the request of the FTC in mid-June. By law, the agency had 30 days to either close its investigation into potential antitrust coocerns or request additional information. FTC officials couldn't be reached for comment.

In February, GM, Ford Motor Co. and DaimlerChrysler AG halted their individual efforts and agreed to form an industry exchange, which could potentially handle as much as $750 billion in annual supply purchases for items such as core materials and parts.

Dearborn, Mich.-based Ford brought in Oracle Corp. in addition to GM's technology partner to help implement the underlying technology infrastructure of the exchange. So far, the automakers have invested a reported $200 million in the marketplace.

Oracle officials weren't available for comment.

Waiting for Approval

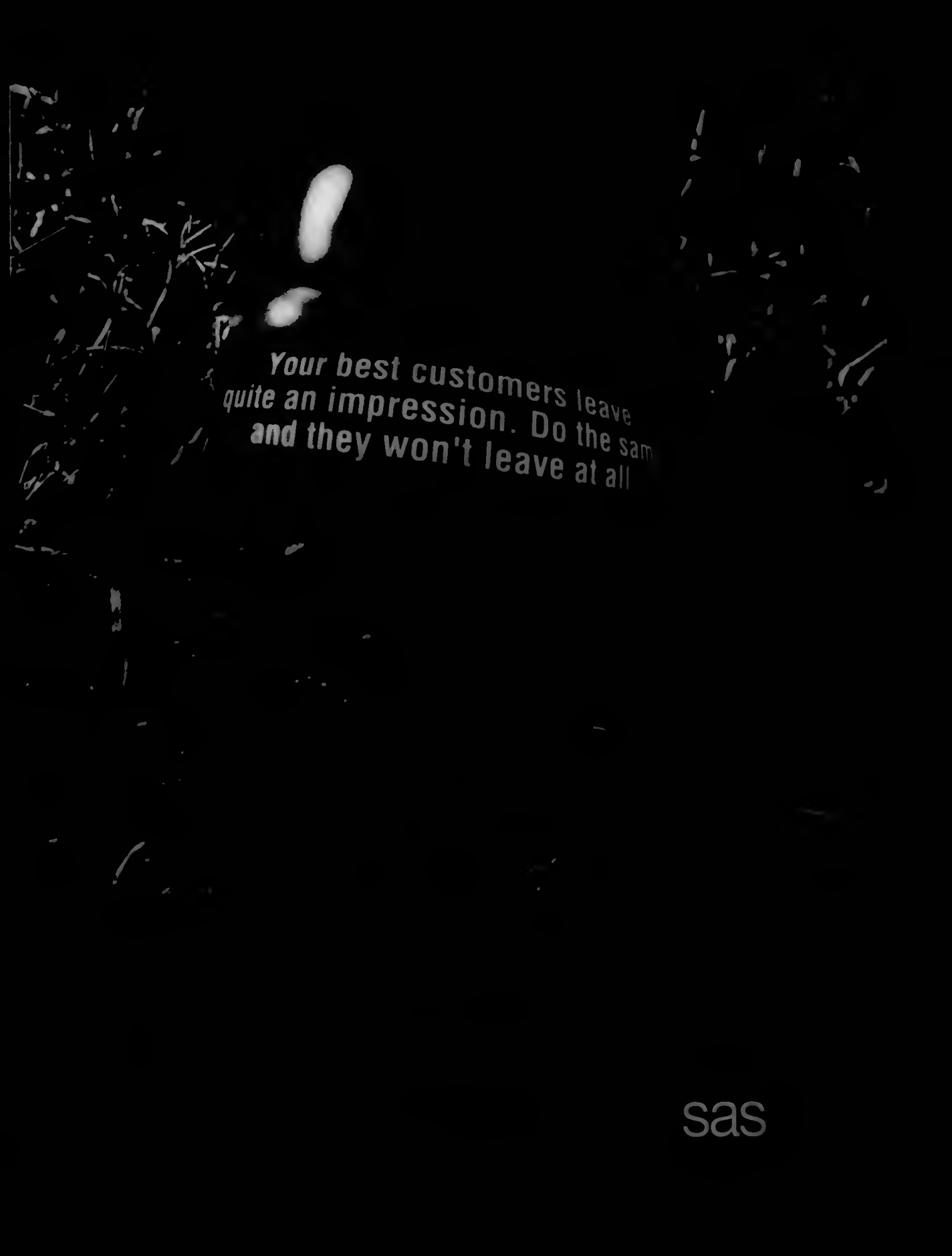
Until the FTC decides that Covisint isn't running afoul of antitrust law, the company can't open for operations.

"We cannot launch without FTC approval," said Dan Jankowski, a spokesman for Detroit-based GM. "We are continuing to cooperate as the FTC cootinues their review. When they finish, we fully expect to be given the go-ahead."

Kevin Prouty, an analyst at AMR Research Inc. in Boston, said the upcoming departure of a member of Covisint's executive management team and the massive infrastructure tasks that are still ahead are bigger impediments to launching the online exchange than the FTC investigation is. "To meet their launch date, they have to have infrastructure and an executive team in place," he said.

Covisint will lose one of its co-CEOs today: A. Alan Turfe, the co-CEO appointed by GM, is leaving the exchange to head MetalSpectrum, an online metals marketplace in Atlanta.

GM officials said they may leave Turfe's former post vacant while Covisint conducts a search for a permanent CEO. Both Ford and Stuttgart, Germany-based DaimlerChrysler also have co-CEOs involved in the venture. ◗


Your best customers leave
quite an impression. Do the sam
and they won't leave at all

sas

ATG Releases Scenario-Based E-Commerce Platform

BY LEE COPELAND

Art Technology Group Inc. (ATG) last week released Dynamo 5, an e-commerce development platform that includes a new scenario-based personalization application, an updated commerce server and an application server that supports the Java 2 Enterprise Edition specification, officials said.

Officials at ATG in Cambridge, Mass., said Dynamo's new application is a core enhancement to the platform because it gives online retailers the ability to use rules to promote products to customers.

One of the features allows online retailers to accumulate information on individual customers and then create marketing rules based on their shopping patterns. For instance, the system can help a Web-based retailer identify customers who purchase only sales items and then target them with online promotions for discounted products.

Steve Milton, vice president of technology at Living.com Inc., an online home products retailer in Austin, Texas, said his company plans to implement the scenario-personalization application.

"We have a broad spectrum of products, so when any individual comes into the site, it's important to narrow down the selection of products that they are interested in very quickly," he said. "What differentiates us from brick-and-mortar stores is access to data and information ... to understand the customer and build one-to-one relationships."

More Flexibility for Users

Living.com is already using ATG's Dynamo Commerce Server to handle transactions through its Web site.

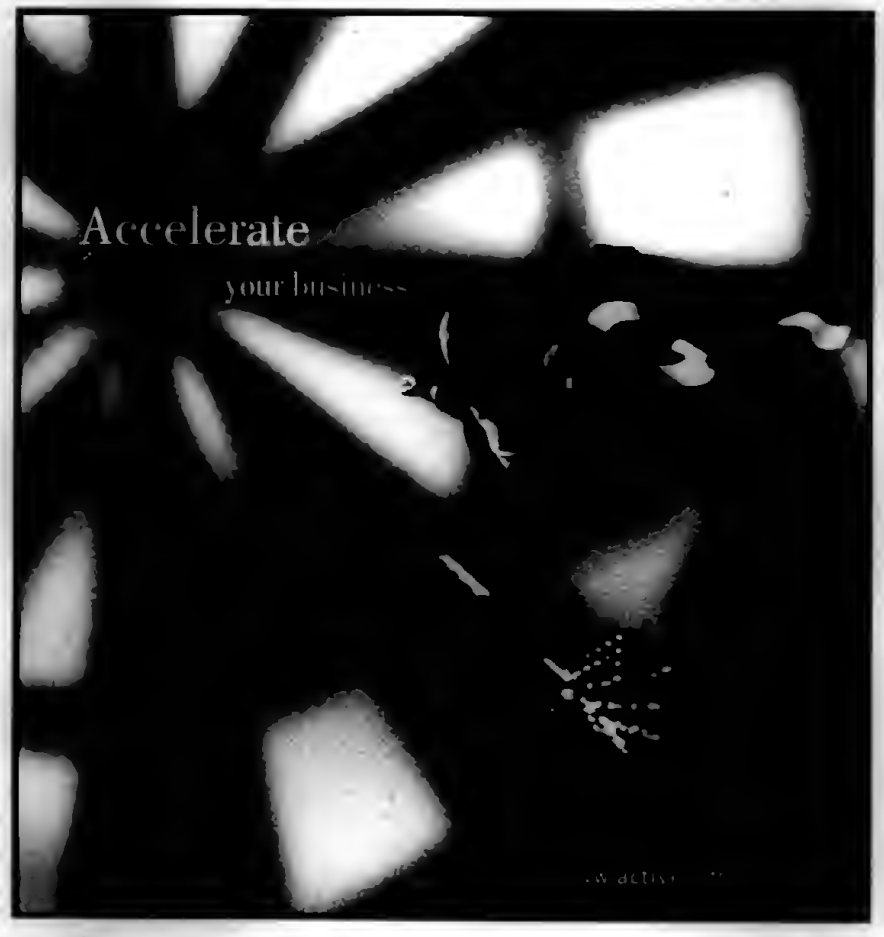
ATG's Dynamo platform competes with other e-commerce development platforms such as Spectra from Allaire Corp. in Newton, Mass.; the WebSphere commerce suite from IBM; and One-To-One Enterprise from BroadVision Inc. in Redwood City, Calif., said Josh Walker, an analyst at Forrester Research Inc. in Cambridge, Mass.

"As commerce platforms evolve, vendors are putting modules on top of the application server," Walker said. "It gives companies a more flexible approach because they may not need all the bells and whistles of every module."

Walker added that analytical and personalization tools, such as Dynamo's new applications, could be improved with simpler graphical user interfaces and Internet wizards to enable nontechnical or marketing staffers to design scenarios and rules.

MOREONLINE

Visit our online e-commerce community for interactive forums and all your e-commerce news.
www.computerworld.com/ecommerce



Active SOFTWARE
eBusiness Integration at the Speed of Change.™

→ To be successful in the new network economy you've got to take quick aim. Active Software can help you reach your target by automating end-to-end business processes between you and your B2B trading partners. No matter what systems or applications you're using. More than 200 of the world's leading organizations rely on Active Software's eBusiness solutions to speed up their business. They've accelerated time to market. Increased revenue. And improved customer service. Isn't it time your business became part of the network economy?



FREE! White paper: B2B Integration for the New Network Economy
Learn how to expand your B2B opportunities by visiting www.activesoftware.com/accelerate or call 888-251-4463 or 408-988-0414



It's Not Just a Dot.Com World

Look Beyond The Valley

If you pick up most magazines these days, whether business, technology or new economy, you'd think the only technology out there was the Internet. But Internet technology is just one of many exciting technologies that business executives need to know about.

Business Executives Must Evolve

Today's Global 2000 CXOs are on the frontline, making technology decisions. As partners in the IT process, you must not only understand enterprise technologies, but adapt to rapid advances in the tech-centric business environment. And we're not just talking Internet. You have to know about CRM, ERP, application software, datamining, knowledge management and the list goes on.

Broaden Your Horizons

Darwin magazine and *darwinmagazine.com* provide an information source with the best ideas in technology from your peers who have had real-life success and failures. No acronyms. No technobabble. No jargon. Just straight talk about how technology can take business executives to a higher order of business.

To subscribe, call 1-800-788-4605.



darwin

Business Evolving in the Information Age

To subscribe, visit www.darwinmagazine.com/subscribe/print_form.html

AN IDG PUBLICATION • CXO MEDIA, INC. • 492 OLD CONNECTICUT PATH • FRAMINGHAM, MA 01701 • 508.872.0080

Microsoft: Antitrust Case Too Messy for Supreme Court

Argues that appeals court should first clear 'underbrush'

BY MITCH BETTS
WASHINGTON

Microsoft Corp. last week urged the U.S. Supreme Court to let the lower appeals court do the heavy-duty work of clearing the "underbrush" of messy issues in its antitrust case instead of taking the appeal directly.

The Supreme Court must decide — perhaps when its next session begins in October — whether to take the high-profile appeal or send it to the U.S. Court of Appeals for an initial review.

Microsoft opposes the government's effort to skip the midlevel appeals court, where the software company won a key legal victory in 1998.

"Microsoft's appeal will include a vast array of procedural, factual and legal errors committed by the district court, which makes this case more suitable for the appeals court to clear the factual and procedural underbrush of this appeal," said Microsoft spokesman Jim Cullinan.

Taking the Direct Route

The U.S. Department of Justice (DOJ) and 19 states appealed the case directly to the Supreme Court in hopes of getting a speedier resolution, since it seems inevitable that the bitter fight will eventually go to the high court anyway.

The DOJ won't comment until it files an official response to Microsoft's pleading on Aug. 15, making its arguments about why fast-track review by the high court is imperative.

After a two-year trial, District Court Judge Thomas Penfield Jackson ruled that Microsoft broke antitrust laws and should be split in two, but the breakup and other remedies are on hold during the appeals process.

Microsoft's central argument is that the appeal is too messy and complex for the high court, which usually takes cases that have one or two big legal issues to resolve.

Hillard Sterling, a lawyer at Gordon & Glickson LLP in Chicago, said he agreed with Microsoft. "This case has a complex tangle of issues that should be distilled by the D.C. Court of Appeals," he said. For the Supreme Court, the case would be a "house of horrors" if it skips the normal appellate review, Sterling said.

Washington antitrust attorney Joe Sims said it's difficult to predict what the Supreme Court will do because there's no precedent, but he said he doubts that the justices will take the immediate appeal. "They want a docket that is limited, focused and narrow. They've been reducing their caseload for years," he said. Plus, they like cases with reasonably clear sets of facts that have been sorted out by the appeals court, Sims said.

The Microsoft case is "big and important, which suggests they might take the case, but it's also messy, which suggests they won't," Sims said. ◗



Benchmarks Posted For SQL Server 2000

Past results canceled due to noncompliance; latest round shows database catching rivals

BY DOMINIQUE DECKMYN

MICROSOFT Corp. suffered an embarrassing setback earlier this month when top benchmark results for its SQL Server 2000 database were canceled by the Transaction Processing Council (TPC) because they were found to be noncompliant. But the company struck back last Thursday with new numbers that analysts said show it's gaining on rival products.

SQL Server 2000 will be released to manufacturing this week.

The four new benchmark numbers, all based on clusters of Compaq Computer Corp. ProLiant servers running Windows 2000 and SQL Server, are slightly better than the canceled numbers. The fastest of the new results was obtained with 12 eight-processor ProLiant 8500 servers, clocking 262,243 transactions per minute (TPM-C) on the TPC-C benchmark.

That's the second-fastest TPC-C result overall, after IBM's recently published 440,879 TPM-C result with its NetFinity servers running Windows 2000 and DB2.

TPC-C is a measure of database performance in transaction processing applications.

But Mark Shainman, an analyst at Meta Group Inc. in Reston, Va., said the latest TPC-C results are mainly about bragging rights.

"It's not really a great measure of true database performance in real-world applications," said Shainman. One of the problems, he said, is that real-life applications would involve much more data being shipped between the nodes of the Compaq cluster, slowing down performance.

SQL Server 2000 "doesn't quite close the gap with Oracle8i and [IBM] DB2, but it's getting there," said Teri Palanca, an analyst at Cambridge, Mass.-based Giga Information Group Inc.

Microsoft's benchmarks for SQL Server 2000 were first published in February and figured highly in Microsoft's marketing for Windows 2000. But the numbers were canceled after being challenged by an undisclosed vendor, widely believed to be Oracle Corp. (which refused to comment on confidential TPC procedures).

The results were found "noncompliant" because the tested configuration didn't allow for the primary key of a distributed database to be updated. Microsoft subsequently modified SQL Server 2000 and reran the tests. ◗

Office 2k Successor Revealed

BY MARK HALL
REDMOND, WASH.

True to his relatively new role as chief software architect, Microsoft Corp. Chairman Bill Gates last week used source code when he outlined his company's future to a roomful of Wall Street analysts.

Microsoft officials also demonstrated the next version of Office 2000, code-named Office 10, for the first time.

Gates explained the interworkings of XML, the basis for its new .Net strategy; showed source code output; and even keyed XML tags into a document to show how they will improve Windows integration with Web-based applications.

"It was a bit techie for me," said one financial analyst.

Gates said that despite significant steps toward an improved digital environment, most enterprise activity, especially B2B operations, remains tied to paper. He laid the blame squarely on the difficulty developers have integrating their applications using today's tools.

One area in which the company expects to see improved integration is in its next release of Office, slated for next year, which will include new XML-based Web features. Excel, for example, will be able to use XML to integrate live or static data into a spreadsheet.

Office 10 will use Web Parts technology, which was first outlined in June. Web Parts are XML-based componeots that can be combined to create a Digital Dashboard, which can be viewed in Outlook or in Internet Explorer. Howard Crow, a Microsoft product manager, said when Office 10 ships next year, a list of Microsoft and third-party Web Parts will be made available on its Web site.

Dwight Davis, an analyst at Summit Strategies Inc. in Boston, said Microsoft's Web Parts strategy could pose "an added IT management burden because [managers] have less control over the [user interface]" on each user's desktop. He said information technology staff can impose an overall lockdown forbidding the use of Web Parts, but that could interfere with departmental user interface needs. Even if IT decided to give some departments leeway in accessing Web Parts, keeping track of the Web Parts in use could be a problem, he explained.

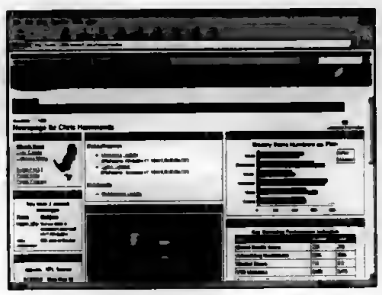
Microsoft also demonstrated another key part of its opcoming portfolio for the knowledge worker: Tahoe, which will work with Office 2000 and Office 10 to provide document management and approval routing features. Tahoe was first discussed more than a year ago but will not come to market until the first half of next year. ◗

Dominique Deckmyn contributed to this report.

Any Data Warehouse Is Only As Good As The Brains Behind It.

With the demand for warehousing skyrocketing, you're juggling immediate eBusiness needs while creating an environment that can scale for future growth. DecisionBase™ is a complete software suite that gives you CA's smartest technologies for designing, deploying, managing, and leveraging your warehouse and other eBusiness applications. Its foundation is the industry-leading PLATINUM® Repository, ensuring a central, shared source of metadata for rapid deployment and better management of your warehouse and eBusiness applications.





What's more, DecisionBase exploits CA's patented, self-learning Neugents™ to mine complex data patterns, predict business problems, and suggest courses of action. Now, you can capitalize on opportunities before they happen — a huge competitive advantage.

DecisionBase also provides everything you need to help your knowledge workers make faster, better business decisions — from interactive BI dashboards to advanced visualization and portal technology. Plus, our CA Services™ team has the resources, knowledge, and experience you need to succeed.

Remember the name: DecisionBase from CA. It's the industry's most intelligent solution for building your warehouse now. Building it right. And, best of all, building it smart.

Call 1-800-890-7528 for more information on DecisionBase, or visit www.ca.com/decisionbase

Call us today to receive a FREE copy of the White Paper, "Putting Metadata to Work in the Warehouse," sponsored by Computer Associates and published by *techguide.com*. Mention ad code: AD DW 0153 DI

COMPUTER® ASSOCIATES
Software superior by design.

DecisionBase™
Intelligent Answers Here™

©2000 Computer Associates International Inc. Islandia NY 11749 All trademarks, trade names, service marks and logos referenced herein belong to their respective companies

BRIEFS

Internet Banks Team With Mail Boxes Etc.

One persistent problem with online-only banks has been that it's impossible to walk up to a real person – or even an automated teller machine – and hand in a deposit. That will change this fall, when deals that two new Internet-only banks have struck with San Diego-based Mail Boxes Etc., USA Inc. go into effect. The banks – Irvine, Calif.-based National InterBank and Wilmington, Del.-based Juniper Financial Corp. – will let customers make deposits from Mail Boxes Etc. offices.

Compaq Reports Strong Growth

Compaq Computer Corp. last week announced profits of $307 million on revenue of $10.1 billion for its second quarter, compared with a loss of $184 million on revenue of $9.4 billion in the year-earlier period. The company credited strong growth in the its Intel-based server and commercial PC businesses, which had revenue increases of more than 40% compared with a year earlier.

Executive Leaps

OPEN MARKET INC. announced that President and CEO Ron Matros has resigned from the e-commerce software vendor effective immediately. Board member Harland LaVigne will serve as interim CEO while Open Market searches for a new top executive. . . . MARIMBA INC. co-founder Kim Polese is stepping down as president and CEO to assist the company with new initiatives and its long-term outlook. John Olsen, 48, most recently unit president at CADENCE DESIGN SYSTEMS INC., will take over Polese's former roles. . . . RED HAT INC.'s chief financial officer, Harold Covert, jumped ship after only four months at the leading Linux company to join SILICON GRAPHICS INC. . . . Joseph Galli Jr., AMAZON.COM INC.'s president and chief operating officer, said he is leaving after just 13 months at the online retailer to become CEO of VERTICALNET INC. Verticalnet operates Web sites that provide information and business-to-business e-commerce capabilities for various vertical industries.

IBM Taps Veteran 'Customer-centric' Exec as President, Chief Operating Officer

Palmisano, heir apparent to Gerstner, praised for success in varied endeavors

BY JAIKUMAR VIJAYAN

The promotion last week of Samuel J. Palmisano to the positions of IBM's president and chief operating officer brings to the top operational job an executive with a history of success at handling varied customer-facing assignments at IBM, analysts said.

Palmisano, who previously headed IBM's server and enterprise storage business, will assume responsibility for all of the company's products and services divisions, as well as its sales and distribution and global financing business.

The appointment will be effective Sept 1.

"Palmisano has proved himself in almost every slot that [Chairman Louis V.] Gerstner put him in," said Sam Albert, president of Scarsdale, N.Y.-based Sam Albert Associates Inc. and a longtime IBM watcher.

In his 26-year history at IBM, Palmisano has had stints in the company's marketing, server, PC, AS/400 and service organizations, giving him a range of experience well suited for his new role as influencer of IBM's future direction, Albert said.

"He understands technology; he is a successful marketer and a good businessman," Albert said.

"He's also a very customer-centric person who likes spending a lot of time with customers and making time for their calls," said Hugh Hale, a former IBM employee and now MIS manager at Blue Cross/Blue Shield of Tennessee. "I think he makes a great heir apparent" to Gerstner, Hale said.

Palmisano's elevation to his new role was accompanied by a string of other high-level executive changes at IBM last week (see chart).

The executive changes come as IBM is trying to pull itself out of a revenue slowdown over the past two quarters.

The company has blamed Y2k-related hardware lockdowns for most of the lag on server sales, especially sales of mainframes.

IBM Shuffle

Management changes announced last week at IBM:

Samuel J. Palmisano, former head of IBM's server and storage businesses, to become president and chief operating officer

John M. Thompson, senior vice president of IBM software, promoted to vice chairman

Steve Mills to head IBM software

Robert Moffat replaces David Thomas as head of IBM's PC business

William Zeitler to head IBM's server group

Continued from page 1

Linux

IBM's move builds on its announcement earlier this year to formally support Linux applications on the S/390. Driving the change is the growing user demand for the open-source operating system, said Pete McCaffrey, an IBM program manager. More than 4,000 mainframe users have downloaded Linux for OS/390 since it became available early this year, he said.

Under typical capacity-based mainframe software pricing, a user adding hardware capacity to run new Linux applications would automatically have to pay higher fees on all other system and application software running on the mainframe.

With the new feature, users will be able to isolate and run Linux applications on a separate partition on their S/390 servers. IBM controls pricing only for its own software.

But several other mainframe software vendors, including Computer Associates International Inc., BMC Software Inc. and Compuware Corp., have agreed not to increase their license fees for customers who increase their mainframe capacity in order to run Linux applications, according to Pete McCaffrey, an IBM program manager.

IBM will offer a special price of $125,000 for each processor that is added to a mainframe to run Linux applications. That's about one-third the price it would have cost customers to add capacity for other applications, McCaffrey said.

Software, Too

Another enhancement being announced this week is the S/390 Virtual Image Facility for Linux software, which will give users a way to partition an Integrated Linux Facility into hundreds of small Linux servers that can be brought online as needed.

"It means I don't have to buy servers and replicate hardware costs every time I need to add capacity," said Michael Rogers, president of Metahost.Net, an application service provider located in Vancouver, Britisb Columbia.

Metahost plans to soon start offering Linux-based office applications running on an S/390 mainframe.

"There is nothing that can scale as well or offer as much security as a mainframe" for running Linux applications, Rogers said.

In another move to cut the costs of Linux software, IBM is also introducing a new per-processor pricing plan under which users will be assessed a flat one-time fee based on the number of processors dedicated to Linux applications, in addition to an annual maintenance fee. Under the current pricing method, users typically pay a monthly license charge based on the overall capacity of the system.

Steps such as these should go a long way toward spurring deployment of Linux applications on mainframes, said Rich Smrcina, a systems software specialist at Grede Foundries Inc. Grede is a $600 million producer of metal castings in Milwaukee.

"I was really hoping IBM would do the right thing by users and not tie Linux" into the kind of costly pricing schemes that are associated with other mainframe software, Smrcina said.

Government To Enable E-Payments

BY MARIA TROMBLY

The U.S. government will bring together all of its payment and collection systems under one roof — well, one domain name — this fall with the launch of Pay.gov, a Web site dedicated to the electronic gathering of money.

The site, which will go live in October, was designed to make the government more accessible and to encourage growth of the digital economy, according to the announcement last week from the U.S. Treasury Department.

Pay.gov was designed to handle up to 80 million transactions, totaling $125 billion each year. People will be able to fill out forms and applications, make payments and ask questions seven days per week, 24 hours per day, according to the Treasury Department.

Payments that can be handled online will include fees, fines, sales, leases, donations, loans and some taxes. For example, both companies and individuals will be able to pay Federal Communications Commission license fees, federal excise taxes and alcohol and tobacco fees.

It doesn't include personal or corporate income taxes, however. According to Alvina McHale, legislative and public affairs director at the Treasury, those taxes are already taken care of by other government systems.

AOL Rivals Unite to Force Open Its Instant Messaging

New group to release specs next month for all IM users to chat with one another

BY LINDA ROSENCRANCE

LEADING technology and instant-messaging (IM) companies last week united in an effort to pressure America Online Inc. to open its instant-messaging service.

The companies, including Microsoft Corp.'s MSN Network, AT&T Corp., Woburn, Mass.-based iCast Corp. and Denver-based Tribal Voice, formed a coalition called IMUnified to support open IM standards.

According to a statement issued last week, IMUnified's goal is to allow users of all IM services to chat live with one another over the Internet. By the end of August, IMUnified said, it will publicly release a set of specifications that will link the networks of its members, allowing users of the services to send messages to one another.

"Internet users want to exchange instant messages with each other, regardless of which service they use," said Brian Park, a senior producer at Santa Clara, Calif.-based Yahoo Inc., a founding member of IMUnified. "We welcome participation of other interested IM companies who share the vision of interoperability based on open standards and encourage them to join our efforts."

Its rivals contend that AOL — which controls 90% of the IM market, according to an iCast estimate — has continued to block users of other services from communicating with its members.

Mark Levitt, an analyst at International Data Corp. in Framingham, Mass., said the question is whether it's in AOL's best interest to bow to pressure from this group.

"The answer is no, it wouldn't be in its best interest, because this group is trying to grab market share [from AOL]," Levitt said.

> [This isn't in AOL's] best interest, because this group is trying to grab market share.
>
> MARK LEVITT, ANALYST, INTERNATIONAL DATA CORP.

Ultimately, Levitt said, AOL will most likely allow interoperability, but only when doing so is in its best interest.

Last month, AOL submitted a plan to the Internet Engineering Task Force (IETF) proposing a standard protocol for instant messaging. A group of 16 AOL competitors subsequently released a white paper criticizing AOL's IETF submission as being neither a "meaningful, nor legitimate" protocol proposal. In a statement, the group said there was no evidence that AOL users will be at risk if an interoperability standard is implemented.

Meanwhile, a Federal Communications Commission hearing last week, addressed the IM issue as part of its review of the proposed merger between AOL and Time Warner Inc.

At the hearing, AOL Chairman and CEO Steve Case said the standard AOL submitted to the IETF is the only architecture for true interoperability and that AOL is committed to moving forward with it. AOL was slow to submit its plan because the firm was concentrating on providing privacy protections and security, he said.

"I think we should be applauded for what we've done," Case said.

IDG News Service correspondent Margret Johnston contributed to this report.

Continued from page 1

Kmart

time has come. They have to make these changes in order to survive," said John Hutchins, an analyst at AMR Research Inc. in Boston. "In order for them to synchronize their logistics and buying mechanisms, they're going to need to update their systems."

Last week's announcements mark the first decisive action taken by Kmart CEO Chuck Conaway since he took the helm May 31. Besides launching the technology investments, Conaway announced the closing of 72 poorly performing stores as well as accelerated inventory reductions and organizational and executive-level changes.

Troy, Mich.-based Kmart plans to spend $460 million to upgrade its information technology systems. Those plans include adding state-of-the-art scanners in all 2,165 stores to help speed the check-out process; faster cash registers in 300 of Kmart's highest-volume stores; a new business-to-business collaboration, planning, forecasting and replenishment system; and a new system for buyers to track and manage inventory to help Kmart and its suppliers get closer to real-time inventory management.

The last item is "a system that has been used internally for over a year, but what we're doing now is making it available to our vendors as well, so there's better communication between our suppliers and merchandisers," said Kmart spokeswoman Mary Lorencz.

Another $210 million will be spent on improvements to the company's distribution and logistics network, including the enlargement of two distribution centers and the installation of new sorting equipment. The company is also taking a pretax charge of $75 million to shelve "certain systems previously under development and related hardware" that are "no longer applicable."

Conaway's 2000 technology and logistics investment figures represent a $135 million increase over his predecessor's projections.

Before former CEO Floyd Hall left in May, he told shareholders that Kmart would invest $328 million in technology this year, up from $131 million last year. He also said Kmart would spend another $207 million on distribution center improvements this year, up from $92 million last year.

Hutchins said Kmart has had "a significant problem with inventory control," often running out of stock on popular items. He predicted that it will take a multiyear effort to develop an improved inventory management system in parallel with the existing homegrown applications.

Many large retailers are forced to develop homegrown systems because packaged applications can't scale to handle the bundreds of thousands of stock-keeping units the retailers have in thousands of stores, analysts said. Those retailers then try to get as much mileage as they can out of their systems.

"Margins are slim, and there is a great desire to wring every day out of a product or service," said Cathy Hotka, vice president of IT at the National Retail Federation in Washington.

In recent years, Kmart has faced the added challenge of rebounding to profitability after losses in the mid-1990s (see chart) and holding on to a CIO. Josepb Osbourn is the retailer's third CIO in the past five years.

Brian Hume, a retail consultant at Atlanta-based Martec International Inc., said Kmart's $670 million technology cost estimate suggests that the company will do more than improve the systems specified by Lorencz. Hume predicted that the retailer will also upgrade its NCR Corp. Teradata warehouse and improve its warehouse management systems.

Hume also noted that Kmart will need to implement software in-house in order to interface with the WorldWide Retail Exchange's online business-to-business marketplace, in which it plans to participate.

"They're exactly the right things to do," Hume said. "The secret now is all in the execution."

That, analysts said, won't be easy for a company the size of Kmart.

"All the technology in the world is not going to work unless you have the proper training and processes in place in the stores, and I think that's going to be a real challenge for them," said Carol Ferrara, an analyst at Stamford, Conn.-based Gartner Group Inc.

Revenue Roll

Kmart's five-year performance record:

1999
Sales: $35.9 billion
Net income: $403 million

1998
Sales: $33.7 billion
Net income: $518 million

1997
Sales: $32.2 billion
Net income: $249 million

1996
Sales: $31.4 billion
Net loss: $220 million

1995
Sales: $31.7 billion
Net loss: $571 million

Net Travel War Intensifies On Wireless Battlefield

Airlines, reservation systems making major progress in competitive industry

BY MICHAEL MEEHAN

ONE MONTH after it released flight information and paging services for Palm Inc.'s personal digital assistants, Chicago-based United Air Lines Inc. last week expanded the offerings to Web phones.

Users of telephones with Wireless Application Protocol (WAP) capabilities can check the status of flights, search for flight availability and check frequent-flier information. A paging service alerts customers about flight delays or cancellations and provides gate information for departing flights.

WAP phone users can access the new features at *www.ua2go.com* or *http://mobile.united.com*.

Wave of Developments

The announcement is the latest in a flurry of wireless developments in the travel industry.

Sabre Holdings Corp. two weeks ago launched a wireless booking tool, and its chief competitor, GetThere Inc., struck an alliance with Bedminster, N.J.-based Verizon Wireless, the nation's largest wireless provider.

Sabre, in Fort Worth, Texas, and GetThere, in Menlo Park, Calif., have been battling for the top spot in the business-to-business travel arena. Both firms see wireless technology as a key to winning that spot.

GetThere launched its wireless initiative for mobile phones last year, offering flight status alerts, itinerary tracking and the ability to change flight plans.

Sabre's Business Travel Solutions, released in early July, supports personal digital assistants and mobile phones and allows travelers to book flights, hotel rooms and rental cars using their wireless devices.

Cindy Groner, Sabre's director of wireless services, said the company this winter will add push technology to deliver messages such as flight status changes and weather updates.

Groner said the booking service will use mostly pull-down windows, so that only the departure and arrival cities need to be keyed in by users.

The Sabre release will support Wireless Markup Language, XML, Handheld Device Markup Language and WAP technologies.

GetThere co-founder and Chief Technology Officer Dan Whaley said companies looking to leverage wireless technology to further their businesses will need to partner with wireless providers that control the content of wireless menus.

GetThere has already struck deals with Sprint PCS Group in Kansas City, Mo., and Bell Mobility in Montreal, Whaley said. GetThere is also negotiating with European wireless providers to enter the European market.

Whaley and Groner acknowledged that the current wireless releases are immature but stressed the importance of taking these baby steps now.

"I think people [in the U.S.] understand intuitively that it is going to be a big thing," Whaley said. "They look at Europe. They look at Japan. They see how popular these devices are, and they can sort of see the future."

"This is where the transactions are heading," Groner said. "It's something you've got to do."

Earlier this month, St. Paul, Minn.-based Northwest Airlines Inc. announced the launch of a wireless service that lets its passengers check gate information and flight status. In June, computer reservations giant Galileo International Inc. in Rosemont, Ill., launched its wireless flight status and rebooking offering. ▶

AT A GLANCE

Competition Taking Flight

Several new offerings in wireless travel applications debuted in July:

July 12 Northwest Airlines announces agreement with Sprint PCS to access flight status and frequent-flier information.

July 17 Sabre Holdings Corp releases its wireless service, which allows business travel customers to make cold bookings on mobile devices.

July 17 GetThere Inc. signs a deal with Verizon Wireless to gain key placement on that company's network.

July 25 United Air Lines extends its paging service and personal digital assistant technology to wireless phones.

Airline Industry Alarmed By Wireless Wideband Tests

Devices operate in navigation band

BY BOB BREWIN

The airline industry is concerned that a recent decision by the Federal Communications Commission (FCC) to allow limited testing of ultra-wideband (UWB) devices could pose threats to "safety of life" navigation systems.

Championed by Time Domain Corp. in Huntsville, Ala., UWB has the potential to transmit "megabits of information at microwatts of power" over the airwaves, according to Ralph Petroff, Time Domain's chairman.

UWB derives this broadband capability by spreading its signals over a wide swath of frequencies, including those used by aircraft Global Positioning System (GPS) navigation systems and radar systems operated by the Federal Aviation Administration (FAA).

UWB devices are short-range, high-powered transmitters used for applications like wireless LANs.

The FCC's decision earlier this month to permit limited testing of UWB gear by Time Domain and two other companies could eventually "open the floodgates" to widespread use of UWB in the airlines' "safety of life bands," according to James Miller, a senior staff specialist for flight operations technology at Chicago-based United Air Lines Inc.

Chris Hutchison, director of frequency management at Annapolis, Md.-based Arinc Inc. — a global communications company that provides service to the airline industry and is owned cooperatively by the industry — echoed those concerns. He said that if the FCC eventually authorizes widespread use of UWB devices, it could lead to the proliferation of wireless networks in "the tens of thousands in a major metropolitan area," operating without any safeguards in the aircraft navigation bands.

United and Dallas-based American Airlines Inc. had asked the FCC to permit UWB testing only with the provision that any such devices include "notch filters" that prevent them from operating in the GPS band. The FCC dismissed those concerns and permitted limited tests by Time Domain and two other firms.

Joe Canny, who oversees spectrum policy issues in the office of the secretary of the U.S. Department of Transportation, said the limited tests authorized by the FCC "are not anything of great significance" and should help provide the data necessary to study the effect of the devices on aircraft navigation systems. Canny noted, however, that UWB devices do pose "potential issues of conflict with GPS as well as FAA radars and a variety of other FAA systems." He said his office is "currently doing our own testing and analysis because we have concerns about flight safety issues."

Jeff Ross, vice president of corporate development and strategy at Time Domain, dismissed the concerns of the airline industry, saying that the low power of UWB devices shouldn't cause interference.

"Each of these devices puts out less than 50 milliwatts of power," Ross said. "If you put all 2,500 devices the FCC authorized for testing in one room, you would have a [total] power output [equal to] the output of a cell phone, which is half a watt."

Once the proposed testing is completed later this year, the FCC will draft formal rules on widespread use — a proceeding in which United, Arinc and the Transportation Department say they definitely intend to participate. ▶



ULTRAWIDEBAND TESTING threatens the "safety of life" band used by planes like this United Air Lines Boeing 747, the airline industry says

Microsoft Security Executive Promises Improvements

Concerns raised about increasing number of threats

BY GARY H. ANTHES
PITTSBURGH

The man who receives more complaints about the security of Microsoft Corp.'s software than anyone oo the planet declared here last week that the company's products are improving in quality and will contioue to become more secure.

In particular, Whistler, the planned next version of Windows 2000 for business users and consumers, is due to show the results of several security-improvement initiatives that are now in the works at Microsoft when it becomes available next year, said Steve Lipner, manager of the company's Security Response Center.

Lipner's comments at a security summit for officials in industry, government and academia come in the wake of a series of disclosures about security holes in Microsoft's products. For example, Microsoft said it is working to fix potentially dangerous holes in both its Outlook e-mail software and its Internet Explorer browser [News, July 24].

Lipner told attendees at the Cyber Security Summit, sponsored by Carnegie Mellon University's Institute for Survivable Systems, that the Microsoft response center typically receives 10 to 100 messages a day from users reporting security problems. "But recently, it's been closer to 100," he said.

He added, though, that the complaints often are about hacks that could have been prevented had users downloaded software patches published mooths — and sometimes years — earlier. Asked about the future of Microsoft products, Lipner said, "Believe it or not, I see fewer vulnerabilities and problems ahead" because of the work of external security researchers and Microsoft's product developers.

Nonetheless, other speakers at the conference sounded a consistently pessimistic note about the escalating threats to computer security from viruses, denial-of-service attacks and the like — and about the technology industry's failure to get on top of the problem thus far.

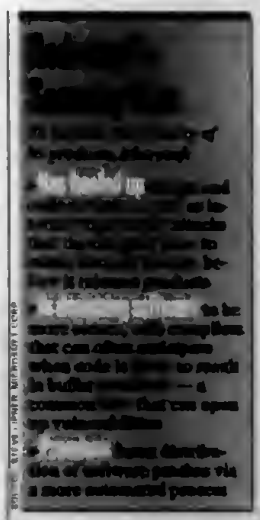
Dave McCurdy, president nf the Electronic Industries Alliance in Arlington, Va., sat on a panel with Lipner and said he's oot convinced the situation is improving. "Steve, I doo't necessarily agree with you that security is going to get better," McCurdy said. "Maybe at Microsoft it will get better."

And without singling out any vendor, Mike Jacobs, deputy director of the National Security Agency, said users "need more secure and stable operating systems" in order to better protect themselves from malicious attackers.

"It's in the realm of operating systems that the most troublesome problems exist," Jacobs said, noting that safeguards such as firewalls and encryption can fail if operating systems are flawed. But fully securing operating systems remains "an elusive goal," he added.

Some attendees called for Microsoft and others to open all source code for inspection, saying that's the only way users can have total confidence in the security of a software product. But Lipner said Microsoft is "not going to give up our intellectual property."

However, Lipner added, the number of universities that have been given Windows source code for security reviews has almost doubled in the past year to about 140 — and that's a trend that will continue, he said.



Former Lockheed VP to Tackle Commerce

E-commerce, data privacy top agenda of new secretary

BY JULIA KING

Data privacy and e-commerce issues will likely top the priority list of newly named Commerce Secretary Norman Y. Mineta.

Confirmed earlier in July by a unanimous vote of the Senate, Mineta will oversee a department of 40,000 people worldwide and a budget of $5 billion. He succeeds William Daley, who resigned to take over Al Gore's presidential campaign.

Mineta represented Silicon Valley in the House for 21 years and he is a former vice president of special business initiatives at Bethesda, Md.-based Lockheed Martin Corp.

Mineta will also lead the implementation of the much-debated safe harbor agreement that governs the exchange of data between European and U.S. companies.

Approved by the European Unioo in June but sent back to the negotiating table by the Europeans ,oo a subsequent vote in July, the data privacy rules have been in process for nearly two years. But now they're ready for implementation, according to Washington sources.

"It's my understanding that despite the additional changes that the European Parliament wanted, the European Commission is going forward witb the agreement as negotiated," said David Aaron, an attorney at Washingtoo-based law firm Dorsey & Whitney LLP, who helped negotiate the safe harbor deal while serving as undersecretary of commerce.

"We're at the stage now where we're looking at implementing the agreemeot," he added.

Privacy Priority

Aaron said domestic data-privacy issues will also likely dominate Mineta's agenda.

"The previous secretary made the issue of domestic data privacy a high priority, and I think it will continue to he so," he said. Noting the incoming secretary's previous work with Lockheed, mnch of it centered in Silicoo Valley, Aaron added that Mineta is "very much aware of the importance of data privacy and e-commerce issues oo the whole."



NORMAN MINETA will lead implementation of the safe harbor deal

In a statement released following his confirmation, Mineta pledged that "mainstreaming the New Economy and working toward digital inclusioo for all Americans" would be among his key agenda items.

The U.S. Departmeot of Cnmmerce said that throughout his career, Mineta has had extensive experieoce in technology and trade issues. For example, be played a key role in settling semiconductor disputes with Japan and helped secure research and development tax credits for businesses.

Andersen Aims for Public Sector

BY JULIA KING

Anderseo Consulting last week announced that it's teaming up with San Francisco-based Epylon Corp. to implement online procurement systems in the largely untapped, multibillioo-dollar public-sector market.

Here's the twist: Chicago-based Andersen will install the hardware and software for making purchases online at no up-front cost to government and educational agencies. Instead, it will recoup its investment over time from suppliers that pay transaction fees each time they sell to the agencies online.

The suppliers' fees will range from 1% to 5% of the value of purchases, said Marty Cole, managing partner of Anderseo's government practice in Reston, Va.

Current estimates peg the value of public-sector purchases in the neighborhood of $1 trillion annually. Cole said a typical government agency can cut buying costs by a minimum of 10% by purchasing online.

Epylon, Andersen's software partner in the public-sector procurement venture, has enhanced Mountain View, Calif.-based Ariba Inc.'s procurement software with functions specific to public-sector buying.

Last month, Washingtoo became the first state to announce an online procurement initiative, signing on with Buysense, a public-sector electronic procurement service developed by American Management Systems Inc. in Fairfax, Va.



IBM.

THE FACT THAT IT'LL LOOK GOOD ON YOUR DESK IS TOTALLY AND COMPLETELY IRRELEVANT.

Actual speeds depend on many factors including the plan you sign up for with your ADSL provider and are often less than the maximum. 'mhz only measures microprocessor internal clock speed, many factors affect application performance. 'gb equals
names are trademarks of International Business Machines Corp. Intel, the Intel Inside logo and Pentium are registered trademarks of Intel Corporation. Windows is a registered trademark of Microsoft Corp. © 2000 IBM Corp. All rights reserved.



the new NetVista™ x40 desktop

Try as we may, people don't listen. They see the x40 and make nontechnological comments like "I want one" and "Can I have this one?" It's enough to hurt an engineer's feelings. The real story here is a simpler way to get onto any network, fast. Here's the short version: a 75% less desk-hungry all-in-one design (for practical purposes, of course), integrated15" flat-panel monitor, five very simple USB ports, internal PCI expansion, preinstalled ethernet, and options like ADSL modems. Now that's beautiful. IBM recommends Windows® 2000 Professional for business. To order the NetVista, call 800 426 7255 or visit **ibm.com**

Intel® Pentium® III processor up to 667 mhz / 64-512mb sdram / up to 20gb hdd / Windows® 98 or Windows® 2000 / cdrom / integrated ethernet / $1799-$2299

e-business tools

one billion bytes when referring to storage capacity; accessible capacity may be less. *Estimated reseller price to end users model 6643-13U. Actual reseller prices may vary. PCs referenced in this ad include an operating system. NetVista and IBM product

Exchange Offers Vendors Open-Source Development

Oracle, Sun bring software projects to a larger scale

BY LEE COPELAND

START-UP COLLAB.NET hopes to cement a place for Web-based community software development among commercial software vendors.

The San Francisco-based company launched an online development exchange with Oracle Corp. last week and unveiled an open-source development project with Sun Microsystems Inc. the week before that. Analysts said the back-to-back projects signal the growing importance of applying open-source development techniques to commercial software development.

Collab.Net builds and hosts development exchanges for customers that use open-source models. It offers services such as source versioning, source browsing and maintenance of developer contact lists. Developers just have to sign up to get free access.

The exchange with Oracle, called Oracle Technology Network (OTN) Xchange, gives member developers access to Oracle development contract projects, jobs and sample code. Oracle officials said they want to foster a resource community for Oracle developers and might consider outsourcing some software development projects if the exchange proves successful.

Stacey Quandt, an analyst at Giga Information Group Inc. in Cambridge, Mass., said an abundance of application development projects, coupled with a severe shortage of developers, was the driving force behind Collab.Net's Oracle and Sun projects.

"This signals the present need for the outsourcing of application development," she said. "Oracle is not opening up the source code for Oracle8i, but by releasing some source code, it hopes to create a community, albeit a walled one, around application developers."

To give its fledgling StarOffice productivity suite a boost, Sun said it plans to release the source code for the desktop application suite via Collab.Net in October. Collab.Net will manage the StarOffice community development efforts, which will include tasks such as specifying application programming interfaces and file formats.

Bill Claybrook, an analyst at Aberdeen Group Inc. in Boston, said the successful management of a project the size of StarOffice could answer doubts about the feasibility of open-source developers enhancing commercial software.

"This will be the largest project inside of Collab.Net, in terms of lines of code and size," said Claybrook. "It's still an experiment, but the fact that [Sun is] doing this gives credence to open-source development."

"One thing that I'm happy about with open sourcing is that anyone with technical resources can make a port of StarOffice to any platform," said Chad Larson, president of DCF Inc., a computer consulting firm in Scottsdale, Ariz.

JUST THE FACTS

Collaboration

- Collab.Net says it will manage online open-source development for customers such as Sun Microsystems and Oracle.
- At *http://otnxchange.oracle.com*, Collab.Net will manage source versioning, source browsing, bug tracking and maintenance of developer contact lists.
- At *www.openoffice.org*, Collab.Net will specify application programming interfaces and XML file formats.



Metadirectory Products Shipped

BY DOMINIQUE OECKMYN

Novell Inc. and Microsoft Corp. both delivered key metadirectory products last week. Novell rolled out its long-anticipated DirXML, while Microsoft released Microsoft Metadirectory Services (MMS) 2.2.

Metadirectories synchronize information among directories, centralizing control of user identity for administrators. Such "products are critical to directories because very few enterprises are standardizing on any one directory product," said Michael Hoch, an analyst at Aberdeen Group Inc. in Boston.

DirXML and MMS 2.2 will be available only as part of consultancy agreements. "The whole metadirectory function is so complicated that you need a consultant to install it," said Hoch.

DirXML, which requires Novell Directory Services (NDS) eDirectory, converts directory information into XML. Michael Dortch, an analyst at Robert Frances Group in San Francisco, said DirXML has an advantage over competitors because XML is emerging as the standard for data interchange and many applications are expected to be able to read XML data. "It's becoming the lingua franca," said Dortch.

By contrast, Microsoft must overcome user skepticism, he said. "The question really becomes, if you are living in a heterogeneous environment, do you trust Microsoft to handle the other environments as equals?" Dortch said.

MMS 2.2, which is based on technology Microsoft acquired from Zoomit Corp. last year, is the first MMS version to be integrated with Active Directory. Dortch said he believes it will take another 12 to 18 months before Active Directory becomes widely adopted.

Moving Away From NetWare

Michael Brown, director of technology at Yellow Transportation LLC in Denver, addressed directory synchronizatioo by moving off NetWare and implementing an all-Microsoft network with Windows NT and SQL Server. "It's a shame, because Novell has a more robust directory," said Brown. However, the market momentum is behind Microsoft, making a move off NetWare and NDS "an inevitability," he said.

Separately, NetVision Inc., an Orem, Utah-based vendor of directory synchronization tools, said it would give away a basic version of its Synchronicity software and charge for services. NetVision is considered to be more limited than DirXML but easier to use.

Novell also introduced last week two single sign-on systems based on NDS eDirectory: NDS Authentication Services 3.0 and a new bundle of Novell Single Sign-on 2.0 with the v-Go client-based software from Passlogix Inc.

"It's amazingly easy to implement," said Tom Davis, senior security coordinator at Indianapolis Power & Light Co., who has been beta-testing the Passlogix and Novell bundle.

Deutsche Telekom Bids on VoiceStream

But Congress may delay $50B deal

BY BOB BREWIN AND RICK PERERA

Deutsche Telekom AG (DT) last week agreed to acquire VoiceStream Wireless Corp. for $50.7 billion. The companies claimed the long-rumored deal will bring more competition to the U.S. cellular telephone market by creating a formidable U.S cellular carrier operating under the international Global System for Mobile Communications (GSM) standard.

The merger faces an uphill battle in Congress, where, Sen. Ernest "Fritz" Hollings (D-S.C.) in June introduced legislation that would prohibit any company directly or indirectly controlled by a foreign government from acquiring a U.S. telecommunications carrier.

The German government currently owns more than 50% of Bonn-based DT.

No Major Threat

A DT spokesman said the German government's interest would be diluted to less than 50% after the merger, and he portrayed the investment as passive. "The government has no influence on the company; it is merely a stakeholder," the DT spokesman said.

Analysts say they don't view the Hollings legislation (S. 2793, the Foreign Investment Act of 2000) as a deal killer. Elliott Hamilton, an analyst at The Strategis Group Inc. in Washington, said the bill isn't a credible threat. "It's too protectionist," Hamiltoo said. "It's oot going to stop the deal but could delay it, making both companies go through more hoops."

Other analysts said DT, which earlier this year wooed Denver-based US West Inc., has offered a high premium for Bellevue, Wash.-based VoiceStream as a way to gain access to the U.S. market.

"The price is extremely high," said Bernt Ostergaard, a telecommunications analyst at Giga Information Group Inc. in Copenhagen. "They're paying this huge premium for each individual subscriber to VoiceStream."

Based on VoiceStream's claim of having served 2.29 million customers last quarter, the DT offer amounts to more than $22,000 per subscriber.

Io other recent wireless mergers, such as Vodafone AirTouch PLC's takeover of Mannesmann AG and France Telecom's purchase of Orange PLC, values have ranged from $5,000 to $10,000 per subscriber, Ostergaard noted.

Though VoiceStream has slightly more than 2 million subscribers, it has licenses that cover a population base of 220 million potential subscribers. Company officials said they see the DT deal as a means of gaining the capital to build out the VoiceStream network and to bid on new licenses in the U.S. spectrum auction this fall.

DT said it will buy $5 billion in VoiceStream preferred stock this quarter to give the company the financing needed to accelerate network and service upgrades.

Perera writes for the IDG News Service in Berlin.



Report: Linux Won't Beat Windows

BY DOMINIQUE DECKMYN

Linux will continue to grow faster than the operating system market overall but won't threaten Microsoft Corp.'s hold of either the server or the desktop in the next few years, according to a new report from Framingham, Mass.-based International Data Corp. (IDC).

IDC's report examines the desktop and server operating systems markets over a period of five years, from last year to 2004. Last year, Linux bulleted into second place with 25% of the market, behind Windows NT'a 38% but eclipsing NetWare from Novell Inc. and Unix. But IDC doesn't expect Linux to continue its current trend, said analyst Al Gillen.

28% Growth

Instead, Linux will grow at a strong compound annual rate of 28% in the five year-period, compared with the market's 17%. But even by 2004, Linux revenue will reacb only $85 million because of its low per-unit sales price, said IDC.

IDC expects Linux and Windows to account for most of the server market growth for the period — with Linux growing at a slightly faster percentage rate than Windows.

For this year, IDC projects Windows NT and 2000 shipments to grow 20% from last year's 2.1 million. The percentage growth of Linux shipments will be in the "mid- to high twenties" from last year's 1.35 million shipments, said Gillen.

Gillen said Windows 2000 is selling slightly better than IDC had expected, and sales are likely to accelerate after the first service pack for the operating system is shipped later this summer.

> It's not going to stop the deal but could [make] both companies go through more hoops.
>
> ELLIOTT HAMILTON, ARALYST, THE STRATEDIS GROUP INC.

SNAPSHOT



BRIEFS

Invensys Vows To Pursue Baan

Invensys PLC last week announced that it'a pursuing its planned acquisition of financially strapped Baan Co., despite again failing to get the amount of Baan shares that it had set as a condition for the $709 million deal. London-based Invensys said it bought or received sale commitments for about 75% of Baan'a shares under an extended tender offer that expired last week. That fell far short of the 95% that it wanted, but the company said it has waived that requirement and has signed a deal with Baan to take control of the Dutch business applications vendor.

Sun Extends E-Auction

Sun Microsystems Inc. is extending its online auction program to resellers, giving them the opportunity to buy selected Sun workstations, servers and software on the spot market and then resell the gear to end users. Before, Sun'a 4-month-old auction program was open exclusively to user companies such as small Web start-ups that bid on available Sun products at Internet auction sites run by eBay Inc., Mercata Inc. and TekSell.com Inc.

Short Takes

SYMBOL TECHNOLOGIES INC. in Holtsville, N.Y., plans to acquire TELXON CORP., a Cincinnati-based company that designs and builds wireless networks for customers in more than 60 countries, in a stock-for-stock merger valued at $465 million. . . . IBM pledged to spend $1 billion in the European wireless services market and to hire 2,500 people in the region in the next two years. . . . COMPAQ COMPUTER CORP. has agreed to pay the U.S. government $4.5 million related to overcharges on a contract with the U.S. DEPARTMENT OF DEFENSE made by DIGITAL EQUIPMENT CORP. Compaq acquired Digital in 1998. . . . Sniffing out cheating spouses wasn't what SPECTORSOFT CORP. had in mind when it created its Web-surfing tracker software, but that's what it'a being used for. "More than half of our business is coming from suspicious spouses," said Doug Fowler, vice president of marketing at the Vero Beach, Fla.-based company.

Deutsche Telekom Bids on VoiceStream

But Congress may delay $50B deal

BY BOB BREWIN AND RICK PERERA

Deutsche Telekom AG (DT) last week agreed to acquire VoiceStream Wireless Corp. for $50.7 billion. The companies claimed the long-rumored deal will bring more competition to the U.S. cellular telephone market by creating a formidable U.S. cellular carrier operating under the international Global System for Mobile Communications (GSM) standard.

The merger faces an uphill battle in Congress, where, Sen. Ernest "Fritz" Hollings (D-S.C.) in June introduced legislation that would prohibit any company directly or indirectly controlled by a foreign government from acquiring a U.S. telecommunications carrier.

The German government currently owns more than 50% of Bonn-based DT.

No Major Threat

A DT spokesman said the German government's interest would be diluted to less than 50% after the merger, and he portrayed the investment as passive. "The government has no influence on the company; it is merely a stakeholder," the DT spokesman said.

Analysts say they don't view the Hollings legislation (S. 2793, the Foreign Investment Act of 2000) as a deal killer. Elliott Hamilton, an analyst at The Strategis Group Inc. in Washington, said the bill isn't a credible threat. "It's too protectionist," Hamilton said. "It's not going to stop the deal but could delay it, making both companies go through more hoops."

Other analysts said DT, which earlier this year wooed Denver-based US West Inc., has offered a high premium for Bellevue, Wash.-based VoiceStream as a way to gain access to the U.S. market.

"The price is extremely high," said Bernt Ostergaard, a telecommunications analyst at Giga Information Group Inc. in Copenhagen. "They're paying this huge premium for each individual subscriber to VoiceStream."

Based on VoiceStream's claim of having served 2.29 million customers last quarter, the DT offer amounts to more than $22,000 per subscriber.

In other recent wireless mergers, such as Vodafone AirTouch PLC's takeover of Mannesmann AG and France Telecom's purchase of Orange PLC, values have ranged from $5,000 to $10,000 per subscriber, Ostergaard noted.

Though VoiceStream has slightly more than 2 million subscribers, it has licenses that cover a population base of 220 million potential subscribers. Company officials said they see the DT deal as a means of gaining the capital to build out the VoiceStream network and to bid on new licenses in the U.S. spectrum auction this fall.

DT said it will buy $5 billion in VoiceStream preferred stock this quarter to give the company the financing needed to accelerate network and service upgrades. ◗

Perera writes for the IDG News Service in Berlin.

World of Wireless

Global wireless users by standard

GSM

- subscribers in 135 countries
- in North America

Code Division Multiple Access

- subscribers in 43 countries
- subscribers in North America

Time Division Multiple Access

- subscribers, primarily in North and South America
- in subscribers North America

Report: Linux Won't Beat Windows

BY DOMINIQUE DECKMYN

Linux will continue to grow faster than the operating system market overall but won't threaten Microsoft Corp.'s hold of either the server or the desktop in the next few years, according to a new report from Framingham, Mass.-based International Data Corp. (IDC).

IDC's report examines the desktop and server operating systems markets over a period of five years, from last year to 2004. Last year, Linux bulleted into second place with 25% of the market, behind Windows NT's 38% but eclipsing NetWare from Novell Inc. and Unix. But IDC doesn't expect Linux to continue its current trend, said analyst Al Gillen.

28% Growth

Instead, Linux will grow at a strong compound annual rate of 28% in the five year-period, compared with the market's 17%. But even by 2004, Linux revenue will reach only $85 million because of its low per-unit sales price, said IDC.

IDC expects Linux and Windows to account for most of the server market growth for the period — with Linux growing at a slightly faster percentage rate than Windows.

For this year, IDC projects Windows NT and 2000 shipments to grow 20% from last year's 2.1 million. The percentage growth of Linux shipments will be in the "mid- to high twenties" from last year's 1.35 million shipments, said Gillen.

Gillen said Windows 2000 is selling slightly better than IDC had expected, and sales are likely to accelerate after the first service pack for the operating system is shipped later this summer. ◗

> It's not going to stop the deal but could [make] both companies go through more hoops.
>
> ELLIOTT HAMILTON, ANALYST, THE STRATEGIS GROUP INC

SNAPSHOT

How Are They Doing?

*Changes in quarterly revenue and net income of selected companies**

AT&T Corp.	$16.2B	3%	$1.75B	9.9%
Bluestone Software	$9.4M	185%	$4.3M	12%
eBay Inc.	$97.4M	97%	$13.2M	158%
Nortel Networks Corp.	$7.8B	48%	$745M	188%
Open Market Inc.	$26.5M	28%	$4.7M	227%
Priceline.com Inc.	$352.1M	216%	-$11.7M	18%
Silicon Graphics Inc.	$534M	-36%	-$608M	-484%
Sony Corp.	$14.4M	5%	-$841M	-579%
Texas Instruments Inc.	$284.3B	19%	$525M	37%
The Santa Cruz Operation Inc.	$26.9M	-52%	- $19.2M	- 525%

*Compared with Q2 1999

BRIEFS

Invensys Vows To Pursue Baan

Invensys PLC last week announced that it's pursuing its planned acquisition of financially strapped Baan Co., despite again failing to get the amount of Baan shares that it had set as a condition for the $709 million deal. London-based Invensys said it bought or received sale commitments for about 75% of Baan's shares under an extended tender offer that expired last week. That fell far short of the 95% that it wanted, but the company said it has waived that requirement and has signed a deal with Baan to take control of the Dutch business applications vendor.

Sun Extends E-Auction

Sun Microsystems Inc. is extending its online auction program to resellers, giving them the opportunity to buy selected Sun workstations, servers and software on the spot market and then resell the gear to end users. Before, Sun's 4-month-old auction program was open exclusively to user companies such as small Web start-ups that bid on available Sun products at Internet auction sites run by eBay Inc., Mercata Inc. and TekSell.com Inc.

Short Takes

SYMBOL TECHNOLOGIES INC. in Holtsville, N.Y., plans to acquire TELXON CORP., a Cincinnati-based company that designs and builds wireless networks for customers in more than 60 countries, in a stock-for-stock merger valued at $465 million. . . . IBM pledged to spend $1 billion in the European wireless services market and to hire 2,500 people in the region in the next two years. . . . COMPAQ COMPUTER CORP. has agreed to pay the U.S. government $4.5 million related to overcharges on a contract with the U.S. DEPARTMENT OF DEFENSE made by DIGITAL EQUIPMENT CORP. Compaq acquired Digital in 1998. . . . Sniffing out cheating spouses wasn't what SPECTOR SOFT CORP. had in mind when it created its Web-surfing tracker software, but that's what it's being used for. "More than half of our business is coming from suspicious spouses," said Doug Fowler, vice president of marketing at the Vero Beach, Fla.-based company.



Protect yourself with the new Powerware 9330. You get maximum system uptime with high-end features like Powerware® Hot Sync paralleling, plus total power and environmental monitoring software. All in an affordable mid-size UPS. And it's scalable, modular and flexible to grow with your e-business infrastructure. Powerware, formerly Exide Electronics, has been protecting mission-critical customers for over 37 years.

www.powerware.com

Most people aren't too happy when power problems shut down their website.



CYA.
Introducing the 9330
Powerware UPS.

No wonder 50% of the top ISPs choose us for hardware, software and service. Visit www.powerware.com/9330 or call 1-800-469-4842.

POWERWARE®
UNINTERRUPTIBLE POWER SYSTEMS

MARK HALL

Moore's Buying Cycle

A FEW WEEKS AGO, I asked Intel CEO Craig Barrett whether perpetually faster processors for desktop machines were necessary for business. He seemed somewhat irritated by the question but mentioned a few things, such as improved data visualization and voice recognition, that should keep driving an IT upgrade cycle that's long been tied to the famous Moore's Law.



MARK HALL is Computerworld's West Coast editor. You can contact him at mark_hall@computerworld.com.

I didn't take the opportunity to debate Barrett, but he's wrong. Business doesn't need faster desktops, even for the tasks he mentioned. In fact, anyone using a Pentium II computer in an office today has more than ample performance at his fingertips to run spreadsheets, access databases and surf the Web.

U.S. companies and consumers are clearly slowing their purchases of new machines. Last week, a Dataquest report showed that for four straight quarters, growth in PC sales outside the U.S. has outpaced growth in the U.S. And the 20%, 30% and even 40% overall expansion of PC sales has been trimmed way back to the teens — even lower in this country.

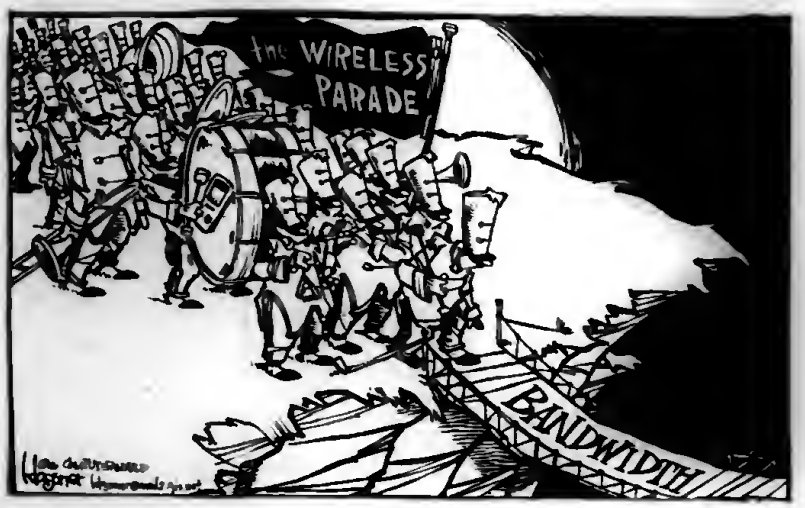
Analysts are suggesting that once companies upgrade to Windows 2000, they will also invest in new hardware. Perhaps. But so far, there's been no IT stampede to ride herd on Win 2k deployments.

Intel is hardly suffering, since solid growth overseas and in the server market more than compensates for the slowing growth of PCs here. But Intel's success doesn't obviate my question: Why should IT invest in new PCs just because they're faster?

For years, Intel benefited greatly from hardware-cycle upgrades, bandying about Moore's Law as if it were the only reason you needed on your requisition form. Now, just being faster isn't enough, especially for IT purchases.

IT executives are focused on building performance into servers and networks, and rightfully so. The goal is to eliminate dependence on powerful desktop processing, making management far easier and user satisfaction much higher.

The PC has become an appliance and, like any other appliance in our lives, we are beginning to expect that it will last for many years. Not mere months. Moore's Law may persist, but Moore's Buying Cycle is, happily, behind us now. ◗



DAN GILLMOR

ICANN's pace slows progress on the Internet

IF YOU HAVEN'T been paying attention to ICANN, the Internet Corporation for Assigned Names and Numbers, this isn't a bad time to start. The little-known but enormously influential organization is making some crucial decisions about the future of cyberspace.

ICANN (*www.icann.org*) isn't a government body. But the nonprofit organization, created at the behest of the federal government two years ago in a move to open some of the Internet's inner workings to the free market, does seem to exercise quasi-governmental powers at times.



DAN GILLMOR is a technology columnist at the *San Jose Mercury News*. Contact him at dgillmor@sjmercury.com.

ICANN's board did some of the right things at meetings in Yokohama, Japan, earlier this month. It made formal, if long overdue, moves toward expanding the domain name system — the system that gives computers on the Net the ability to find and recognize one another — with new top-level domains to complement .com, .net and the like. These were baby steps. They won't solve the deep-rooted problems that should worry everyone except the companies and lawyers now thriving on the artificial scarcity created by today's domain system.

The way ICANN plans to expand domain names is reminiscent of the Supreme Court's decision in 1954 to end racial segregation in schools, a process that was to take place with "all deliberate speed" so as not to threaten the deepest social fabric. Schools are still segregated, in part because the court gave opponents the time to come up with new tactics.

ICANN, pleading caution in the name of stability, is moving with deliberate speed, too. As a result, the domain name system may continue to suffer from a shortage that has no basic reason to exist in the first place.

Network Solutions Inc. (NSI), whose monopolistic tendencies sometimes make Microsoft look kind and gentle, will be looking for ways to continue its domination of the system. Its latest plan — to auction off domain names that haven't been paid for rather than return them to the general pool for re-registration — is an outrageous but illustrative move for NSI. When it comes to curbing NSI's manipulations, no reform can come quickly enough.

Corporate trademark holders will also undoubtedly try to use their clout — which has already bowled over Congress, ICANN and the

World Intellectual Property Organization — to prevent anyone from using trademarked names in any other context. ICANN's go-slow approach means that any sensible trademark holder will race to register a whole new series of domains, thereby making the new (or existing) registrars rich or richer.

This isn't what I'd call reform. It may be progress, however, because once everyone sees that new domains can be launched smoothly, ICANN will have no excuse not to open the proverbial floodgates. Then, and only then, will the marketplace actually start working.

MICHAEL COHN

Happy at work? Take this test, and you could be

LONG HOURS? Unbearable pressure? Is your job eating you alive? Then you must be an idiot for staying, because there's an incredible labor shortage out there and high-tech skills are in demand. Employers are desperate. Openings abound. Corporate America wants you! If you can hang a tape or move a mouse, there's a six-figure salary just around the corner.



MICHAEL COHN is a highly sought-after technical professional in Atlanta, only because he hasn't paid his American Express bill since March. Contact him at mdjohn@aol.com.

This means you should be fulfilled. Elated. You should love your job.

Not sure? There's a simple solution: Take this test. Rate your job. Find out if you're happy. Because if you're not, if you're miserable, if you're ready to strangle an end user or two by the end of the day, there are a dozen other jobs out there, and odds are you can have a handful by this afternoon.

1. Are you compensated fairly?
   a. Yes, I have the upside potential of an Internet start-up.
   b. My upside is limited, but I have the security of a brick-and-mortar company.
   c. Every time I ask my boss about money, I get hit upside the head with a brick.
2. You're traveling week after week, but it's worth it because you regularly receive:
   a. Plenty of bonuses and promotions.
   b. Plenty of stock options.
   c. Plenty of frequent-flier miles and a boatload of those little bags of peanuts.
3. You work hard, but at least you get:
   a. Half days on Fridays.
   b. Three-day weekends all year.
   c. Three weekends all year.
4. With whom would you say you have the best working relationship?
   a. Your boss.
   b. Your co-workers.
   c. Your headhunter.
5. How do people think of you?
   a. Six or seven people wish they had your job.
   b. Six or seven people wish you'd do your job.
   c. Six or seven people make you do their jobs.
6. Are you exposed to new projects and technology?
   a. I'm stuck on one project.
   b. I get to work on lots of different projects and get all the technology I can handle.
   c. I'll have to work on lots of different projects until I find a technology I can handle.
7. How flexible is your employer about telecommuting?
   a. Not at all; we have to work at the office.
   b. Very flexible; we get to work from home.
   c. Somewhat flexible; we have to work at the office and work more when we get home.
8. Describe your office's teamwork and culture.
   a. We work effectively in project teams.
   b. I'm more effective working by myself.
   c. We used to work in project teams — until everybody quit, and now I'm doing this whole stinking project by myself.
9. Are you a mobile employee? How do you feel?
   a. Yes, I'm mobile and feel isolated and alone.
   b. Yes, I'm mobile, but thanks to e-mail, voice mail and pagers, I never feel alone.
   c. Yes, I'm mobile, and thanks to e-mail, voice mail and pagers, I'm never left alone.
10. Finally, rate your loyalty — how long do you plan to stay at this employer?
    a. Till I finish this year.
    b. Till I finish this project.
    c. Till I finish this sentence.

How did you score? Our panel of experts has determined that if most of your answers were:

A – You're probably in the wrong job.
B – You're definitely in the wrong job.
C – You might be better-suited for a career in toll-booth fare collection.

READERS' LETTERS

Some stats missing

RONALD L. PLESSER's July 3 column ["Leave Policing Up to Private Sector," News Opinion] presents a sterling example of using statistics to support your position. He stated, "A recent FTC report states that all 100 of the most popular Web sites post privacy notices." What he fails to note is that the same study found that only 20% of the busiest commercial sites used widely accepted fair information practices.

Shame on Mr. Plesser for using an otherwise damning study about online privacy to support his hands-off position. I would be curious to know his law firm's major clients.

Laura Bray
San Antonio

Oracle can survive Lane's departure

HOW SHORT OUR memories are. It was amusing to read the quotes in Jennifer DiSabatino's article on Oracle's loss of Ray Lane in your July 10 issue ["Oracle Faced With Loss of President"]. It was just a couple of years ago that *Computerworld*, along with financial analysts, were decrying Oracle's performance while Larry Ellison was off on his extended sailing trips and the company languished under Mr. Lane's guidance. Since Mr. Ellison's return, the company has performed stellarly. Ray Lane is an extremely capable executive and a very likable person, but Larry Ellison is a true visionary, and he is the heart and soul of Oracle.

Bill Brown
Houston

No jealousy here

BILL FRISBEE wrote on June 26 that Windows-bashing is simply jealousy [Readers' Letters], but I must take exception. As a trainer-consultant, I worked on Unix, Windows and Macintosh systems for more than 13 years, and I can say anything is better than Windows. Windows is klunky, hard to use, defies common sense and plain doesn't work a majority of the time. As for 92% of the world running Windows, that's defined as a monopoly.

Jim Howe
Columbus, Ind.

Speed RAMifications

I TAKE ISSUE with your statement that "DDR-SDRAM is slower than RDRAM" ["Random-Access Memory," Technology QuickStudy, July 24]. Several Web sites have done detailed studies that show that this isn't the case. The most notable is *www.tomshardware.com*, which showed that even 133-MHz SDRAM is often faster than RDRAM. Maybe that's why the latest motherboard chip set from Intel, RDRAM's biggest booster, uses SDRAM.

Jay M. Scheiner
Bethesda, Md.

IT books to read

THORNTON MAY'S "In Search of Great IT Literature" [News Opinion, July 10] slashed at a nerve. What a challenge! The works of Diebold, Negroponte, Tapscott, Kurzweil, Varian and Kelly come to mind. But they're reasonably recent and perhaps too digitally focused (a passing fad?). Dr. May's article screamed for depth.

May I recommend the following light reading to those dot-com CEOs who may seek some understanding of the whys and hows that led to the New Economy: Charles Babbage (1864), *Passages From the Life of a Philosopher*; Ada Augusta (1842), *Notes on Menabrea: Sketch of the Analytical Engine Invented by Charles Babbage*; Alan Turing (1946), *Proposal for Development in the Mathematics Division of an Automatic Computing Machine*; John von Neumann (1948), *The General and Logical Theory of Automata*; Ernest Nagel (1955), *Self-Regulation*; Norbert Weiner (1964), *God and Golem Inc.*; Ludwig von Bertalanffy (1968), *General System Theory*.

John Sagi
Professor of business and computing
Anne Arundel Community College
Arnold, Md.
jsagi@mail.aacc.cc.md.us

COMPUTERWORLD welcomes comments from its readers. Letters will be edited for brevity and clarity. They should be addressed to Jamie Eckle, letters editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax: (508) 879-4843. Internet: letters@computerworld.com. Include an address and phone number for immediate verification.

BARBARA ANTHONY
AND THOMAS COHN

Laws apply equally to Internet sales, advertising

ALTHOUGH THE NUMBERS of companies advertising and consumers shopping on the Web are soaring, cyberspace isn't the Wild West some fear it to be. In the excitement and rush to sell and buy online, consumers and businesses should remember that the same consumer protection laws that have applied to commercial activities in other media apply also to the Web.



BARBARA ANTHONY is the regional director for the FTC's Northeast Region, based in New York.

The Federal Trade Commission (FTC) recently issued guidelines explaining how its consumer protection rules and guides — many developed long before *dot-com* became a household phrase — apply to advertising and sales on the Internet.



THOMAS COHN is an associate regional director for the FTC's Northeast Region, based in New York.

In the past few years, the FTC has filed more than 100 Internet-related law-enforcement actions, halting illegal schemes, freezing more than $65 million in pending cases and returning more than $20 million to consumers. The FTC has stopped consumer injury in Internet scams worth more than $250 million in annual sales.

To reinforce the message that consumer-protection laws apply equally to e-commerce and to provide guidance on how to apply these laws, the FTC recently issued a guide, "Dot Com Disclosures: Information about Online Advertising." It's a must-read for all who are selling and marketing online, and savvy consumers might want to keep a copy on top of their computer tables. The guide is posted at *www.ftc.gov/bcp/conline/pubs/buspubs/dotcom/index.html*.

The basic theme of "Dot Com Disclosures" is familiar: Disclosures required to prevent an ad from being misleading must be clear and conspicuous. The guide details the steps advertisers can take to ensure that they pass this test. Clearly, disclosures that consist of legal jargon in tiny print that appear for a few seconds won't cut it. The guide offers examples. Here's what advertisers can expect to be told:

- Place disclosures near — and, when possible, on — the same screen as the claims they qualify.
- Use text or visual cues to encourage consumers to scroll down a Web page when it's necessary to view a disclosure.
- Display disclosures prior to a purchase, but recognize that placement limited to only the order page may not always work.
- Review the entire ad to ensure that other elements — test, graphics, hyperlinks or sound — don't distract attention from the disclosure.
- Repeat disclosures on lengthy Web sites and when repeating claims, as needed.
- Display disclosures for a sufficient length of time for consumers to notice, read and understand them.
- Use clear language and syntax so that consumers understand the disclosures.

Details about hyperlinking, banner ads, color, graphics, multimedia messages and more are spelled out to guide online marketing practices.

"Dot Com Disclosures" doesn't establish new rules but reflects the FTC's adaptation of basic consumer-protection laws to the uniqueness of Internet sales. This guide should prove an indispensable aid to online businesses in developing advertising practices that comply with existing consumer-protection laws. ◗

THORNTON MAY

IT's role in the new model of marketing

MUCH OF OUR THINKING about marketing, encapsulated in the mnemonically perpetuated 4 P's — price, product, placement and promotion [News Opinion, July 17] — is flawed. There's a new model for marketing, the 4 C's: communication, customization, collaboration and clairvoyance. Information technology leaders in large organizations will be pleased to learn that at the operational heart of each of these new levers lies the informed and innovative practice of our craft: IT management. For now, let's focus on communication.



THORNTON MAY is vice president of research and education and corporate futurist at Cambridge Technology Partners Inc. in Cambridge, Mass. Contact him at tmay@ctp.com.

In the days of classic mass marketing, consumers were essentially told what they wanted. Communication worked in only one direction, creating demand. The primary task of marketing was simply to get the product on the shelf.

Fortunately, we have evolved. Professor Rashi Glazer, a colleague at the Haas School of Business at the University of California at Berkeley, uses the terms *smort* and *dumb* to describe contemporary markets that require informed interactivity. A smart market or product changes with the environment; a dumb market doesn't.

An example of smart marketing is the tactic used by shopping-mall bookstores of changing the displays in their windows during the day to reflect most of the traffic flowing past. In the early mornings, mall traffic is primarily made up of aged, but vibrant, mall walkers. The informed book shops have window displays geared to their interests. No sooner have the mall walkers hit the showers than a new group arrives: mothers with strollers. The shops replace the titles loved by the elderly to content that is more in tune with the moms' needs. They also clear the aisles of stand-alone displays that get in the way of the big-wheel baby carriers. And on and on it goes.

Jeff Williams, professor of strategy at Carnegie Mellon University's Graduate School of Industrial Administration, brings the concept of interactivity into the realm of creating strategy. Imagine you're 6 feet 6 inches tall. You're playing tennis. Your height is an advantage. You can recognize this and act. If you concentrate on your service and net game, which take advantage of your height and involve relatively low energy expenditures, you achieve a good competitive fit.

The next time, assume that your court opponent is 7 feet tall. What has changed? Have your capabilities changed? Yes, in the important competitive sense, even though you're the same in absolute terms. The point? Capabilities shouldn't be defined in isolation. Imagine you step onto the court and there is no net. In its place are a table and a chessboard. What has happened is that the rules of the game have changed. The key to being smart is being able to understand when things change. The strategic high ground belongs to companies that are able to create a communication channel that informs them when things change.

At last month's *Computerworld* Premier 100 IT Leaders Conference in Palm Desert, Calif., Charlie Feld, former CIO at Frito-Lay and Delta Air Lines, explained that the bad state of customer service in many industries is directly due to not understanding "when things change," which, in turn, is due to poor communication. In the old days at Frito-Lay and Delta, the companies "knew" their customers. Unfortunately, as the businesses grew, the intimacy of those early days gave way to the customer becoming a faceless and nameless "thing" to be managed instead of a living, breathing, paying human to be delighted.

World-class companies are figuring out that it's "crazy" to try to dictate terms to the customer. Best practice involves creating a conversation in which the customer can tell you what he wants. Dell Computer continues to outperform rivals because it doesn't build a computer before the customer asks for it. The first step toward building a customer-centric, real-time organization is establishing a solid technological pathway for a customer to communicate with you. IT has a massive role in this build-out. IT leaders are engaged in talks with marketing executives on how to do this. Is this where you're spending your time? ◗

BUSINESS

HOT OFF THE PRESS

Standard Register's new Internet spin-off, SmartWorks.com, was born and raised in the $48 million paper-form manufacturer's IT group. Now, SmartWorks is aiming to generate $10 million in revenue as a new application service provider in the $115 billion U.S. print market. ▸ 30

E-PRIVACY LAW?

As questions of online privacy for consumers heat up, Congress is weighing legislation that would require firms to notify employees how and when their e-mail, Internet and phone use is being monitored. But critics say the law goes too far, giving employees online protections they don't even have with traditional communications. ▸ 30

TRUSTED PARTIES

The American Bankers Association recently announced the launch of TrustID, an authentication system for online banking that would take security out of the hands of dot-coms and put it back in the hands of banks, which, says the ABA's Stephen Schutze, are seen as "trusted parties." ▸ 31

DELTA'S READY

Three years after Delta launched a massive IT overhaul project, the company is finally moving forward with major technology rollouts, including a smart-card check-in system, passenger standby boards and new Windows NT servers for its boarding agents. Analysts say Delta's innovations are likely to serve as models for the future of the airline industry. ▸ 31

WORKSTYLES

Wonder what it's like to work in IT at Petsmart.com? Chief Technology Officer Eric Kidd says his staff works long hours, but the rewards are plentiful. Staffers working on a recent project, for instance, were rewarded with trips to Las Vegas. ▸ 34

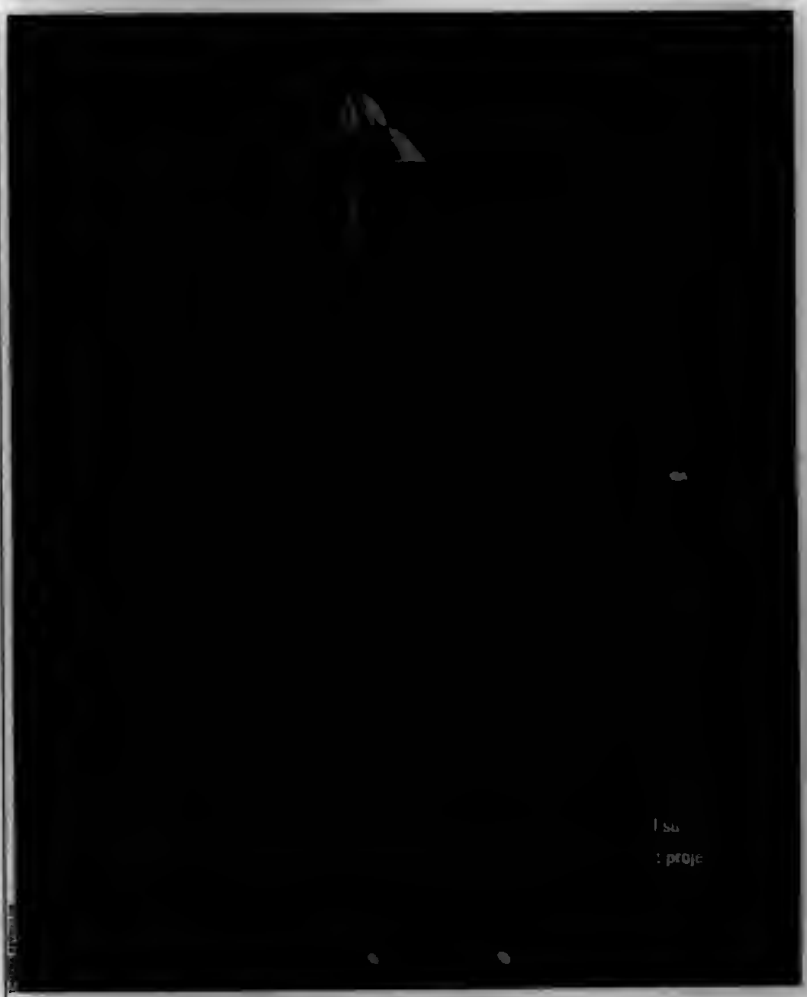
SURFING FOR THE RIGHT JOB

"Brad Martin" says he was determined to escape what he believed was his unfortunate destiny to spend life in help desk support jobs. So Martin, a self-described insomniac, went online and spent his days and nights scoping out his future. Find out from a real-life online job seeker what to expect from Web headhunters and job boards. ▸ 36

QUICKSTUDY

In today's fast-paced business market, it's critical for information to move to and from the factory floor and plant managers in real time. Manufacturing execution systems can help optimize production by delivering information to those who need it as soon as it comes in. ▸ 38

MORE
Business advice 39
Opinion: Jim Champy 34



KEEPING IT PROJECTS GOING

SO, YOU HAVE BUY-IN on your IT project from a top business executive. That is, until he leaves the company. Does that spell the end of your project? Not necessarily. Learn how to keep an IT project on track after the departure of your key business-side cheerleader.

35

SUN iFORCE™ PROVIDER IT

BUYandHOLD.com helping customers reach financial goals

When a data-intensive online business makes the commitment to use best-of-breed technology across its infrastructure, it needs to make sure those tools can communicate with each other. Case in point: BUYandHOLD.com's Web site is built on a three-tier architecture. The browser interface is Java. The application server that forms the middle tier is Java. And the back-end Oracle database? Java, of course. All that Java ensures that BUYandHOLD.com can use best-of-breed technologies. To make it all work, the company relied on connectivity tools from Merant.

BUYandHOLD.com seeks to make investing truly affordable, helping customers achieve their financial goals through the time-tested buy-and-hold investing strategy (which has worked out pretty well for a guy named Warren Buffett). In an era of day-trading and churn-and-burn, BUYandHOLD.com is a refreshing change; it was formed in 1998 by a team that "shares the core belief that a long-term investment horizon is the most potent strategy for individual investors to accumulate wealth," the company says.

The New York-based financial services company charges a rock-bottom $2.99 per trade to investors willing to focus on long-term results. Moreover, customers can purchase a set dollar value each month – $50 of INTC, for example, regardless of the value of one share of Intel Corp. stock. This disciplined approach to investing is a proven wealth-builder over the long haul. BUYandHOLD.com was determined to take a similarly disciplined approach when it built its Web infrastructure.

That's where Merant came in. No johnny-come-lately, Merant was founded in 1976. Headquartered in Rockville, Md., and featuring offices worldwide, the company has a mission "to accelerate our customers' business through the application of innovative information technology." The centerpiece of this effort is the Egility framework, a soup-to-nuts system that combines expertise, technology, best practices and a network of partners to deliver both infrastructure and enterprise solutions. The global organization boasts about $370 million in annual revenues, over 2,000 employees, 500 technology partners – including Sun Microsystems Inc. – and more than 35,000 customer sites, including the entire Fortune 100.

When BUYandHOLD.com came to Merant, the financial services company made it clear that it wanted best-of-breed technology across the board. According to John Goodson, vice-president of research and development at Merant, there were several reasons for this decision. "They wanted high-performance access to their data," Goodson says. "For the type of service they were providing, they needed a strong infrastructure.

Techies.com delivers qualified candidates to IT managers

When your very name includes the word "techies," you need to make darn sure your Web site is bullet-proof and scalable. And that goes double if you're a career resource site aimed squarely at information technology professionals.

This describes techies.com perfectly. Since its launch in 1994, the Edina, Minn.-based online business has rocketed to 600 employees, has signed on more than 400,000 members and has become a top-20 Web property. It's known for delivering qualified candidates, rather than mere warm bodies, to technology managers around the country.

Moreover, the company has established a unique local flavor by creating city- and region-specific sites in the 40 largest IT markets in the U.S.

According to techies.com, the company is committed to providing information to members and clients quickly and efficiently with systems that are easy to use, expandable, secure, reliable and redundant, so it's no wonder the company sees Sun Microsystems Solaris hardware as a nonnegotiable linchpin of its infrastructure.

techies.com

Techies.com is not just for IT pros; it's run by them, as well — developers, consultants, recruiters and trainers. So when the company wanted to offer a rich array of services online, the idea of using complex, ahead-of-the-curve systems was an irresistible challenge. By partnering with Maryville Technologies, a Sun iForce Provider, techies.com was able to create a technology infrastructure that the company believes is "unparalleled in the online industry."

Headquartered in St. Louis but with offices throughout the central region of the country (including one in Minneapolis), this systems integration and consulting company has grown relentlessly since it was founded in 1994 and has garnered many awards.

Maryville stresses that its consultants "always focus on the strategy, design and enablement aspects of information technology infrastructure, enterprise management and application deployment." Because its engineers combine development skills with project management know-how, the company can help with the 30,000-foot view – yet get its hands dirty implementing that vision.

Techies.com first met with Maryville Technologies in December 1998, according to Tim Gibbons, client services director in the company's Edina, Minn. office. Techies.com "was reforming its direction," he says, "migrating from [a focus on] online training to quality Internet IT recruiting."

Several months later, in April 1999, "Project Afterburner," as it was creatively dubbed, really got going. "They were initially on a stand-alone Windows NT server [running Microsoft's] SQL server," Gibbons says. "They had some performance, availability and scalability issues."

A good business partner takes pains to listen to the client's wants and needs. In fact, one of

LEADER PROGRAM

Their overall goal was to give the customer a positive experience." Most importantly, he adds, BUYandHOLD.com had no intention of pinching pennies and settling for second-best: "They wanted to invest in something they would be proud to use."

This was the driving force behind the heavy reliance on Java – as far as both Merant and BUYandHOLD.com were concerned, there was no better way to link up the best available technologies. Those technologies included Sun servers, the Solaris operating system and an Oracle Corp. 8i database.

BUYANDHOLD,INC.

One factor that attracted BUYandHOLD.com to Merant was the company's hard-won reputation as an early adopter of just-out-of-the-box technologies. "We've always provided the newest features as early as possible," Goodson says. "We had JDBC [Java Database Connectivity] 2.0 functionality basically before anyone else did." JDBC is part of the Java Developer's Kit specification. Merant is widely seen as the industry leader in standards-based data connectivity. Its DataDirect family of products allows businesses to choose from a range of data access options.

DataDirect SequeLink Java Edition version 2.0 adds support for the latest JDBC 2.0 Core Specification as well as improved Secure Socket Layer (SSL) security. In addition, the new release features the first JDBC driver to support JDBC 2.0 Core Specification and Java 2 Platform (which was formally known as JDK 1.2), as well as support for the new SequeLink Server for Oracle 7.3.3 on OS/390.

In the end, "the project went really smoothly," Goodson says. "It was one of the quickest implementations we've had. BUYandHOLD.com was able to plug our technology in, and it worked." Merant plays a strategic role on the Web site; its software serves as the data integration backbone between the Web application and the back end. All the information captured at BUYandHOLD.com – registration data, trade information, you name it – passes through Merant tools. "Anytime you do anything that touches data," Goodson says, "it goes through our software."

Maryville Technologies' stated commitments reads: "We will listen carefully to our clients and learn their technical and business needs to serve them well." Maryville Technologies did just that with techies.com. "We sat down and blue-skied it," says Gibbons, who spearheaded the engagement. "They wanted best-of-breed technology, and they needed scalability."

At Gibbons' urging, techies.com switched from Microsoft's Windows NT to Sun Solaris. "They came to us because we're an integrator for Sun," Gibbons says. "Sun has done a fantastic job establishing themselves as the go-to platform for dot-coms, and Solaris is predominant. They've been great with support, services and applications."

Several teams, including internal ones, worked on Project Afterburner — application development, business/user interface, quality assurance, production (which addressed art issues and infrastructure). Maryville Technologies was devoted to infrastructure. Gibbons' team focused on Web servers, application servers, database servers, an Oracle parallel server, LANs, WANs, a test LAN and so on. Moreover, Maryville Technologies "built processes to support" these core tools, Gibbons says. That included a network monitoring system that incorporated tools from BMC Software Inc. and an HP OpenView network node manager.

The Award Program

The Computerworld Custom Publishing and Sun Microsystems sponsored contest recognizes innovative Sun implementations around the world. End users were invited to submit their Sun "channel provider-developed" implementations. The winners were chosen by IDC based on the uniqueness of the solution and its value to the host organization. The winners' stories appear in Computerworld during July and August and online at *www.Computerworld.com*

In addition, Maryville Technologies staffers worked on the techies.com application team, developing an application architecture that would be scalable, flexible — and provide very high-performance.

So how did Project Afterburner turn out? According to both techies.com and Gibbons, the ambitious undertaking went extremely well. "We were on deadline and on budget," Gibbons says. "It was highly successful. Techies.com has had very few problems with performance and scaling."

With Maryville Technologies' help, techies.com has created a performance-rich, stable environment — that's vital when you're catering to savvy technology pros.

COMPUTERWORLD CUSTOM PUBLISHING

The Value of Certification

Situated between the manufacturer and the end-user customer, channel partners are continually evolving their business models to ensure that they stay competitive in the fast-paced IT industry. To accomplish this, channel partners need to have a solid understanding of the technology on which they are building the solution, and customers need to know that the partner has the expertise. These solutions are often mission-critical and must be implemented in Internet time.

Supplier certification programs are designed to provide the partner the knowledge required to effectively work with the products. Successful completion of a certification program often allows the channel partner a higher level relationship with the supplier, because some suppliers allow only those that successfully completed certification access to the equipment. Certified partners are also recognized by the supplier as those that have made a commitment to the vendor. They may be the only partners allowed additional benefits such as leads, access to engineering or resources such as demo equipment, and inclusion or access to marketing programs.

While certification is costly to the partner, the benefits can outweigh the costs because it provides the customer a seal of approval. The supplier should have confidence in the partner, and the partner should make a clear commitment to the vendor.

With the introduction of specialized certification programs, channel partners can provide more in-depth training. This translates to added revenue as the solutions tend to be more complex. With the right training, the channel partner can increase their time to delivery and their value-add services.

But the benefits extend beyond just the program and commitment levels. A recent IDC study of end-user channel preferences shows the primary reason for dissatisfaction with their channel was lack of service and support. Through vehicles such as certification, the channel partner is equipped to provide the level of service and support required, allowing a higher customer retention and providing a win-win scenario for the channel, the supplier and the customer.

IDC
INTERNATIONAL DATA CORPORATION

Printer Turns Service Apps Into New Business

Traditional paper forms business creates spin-off to stay viable in Internet Age

BY JULIA KING

THE STANDARD Register Co., a Dayton, Ohio-based paper forms manufacturer, is hoping to skirt obsolescence by changing into an electronic business.

On June 6, the $48 million company spun off part of its information technology group into an independent application service provider called SmartWorks.com Inc.

Since 1995, industry's migration to electronic documents and the Internet have helped erode corporate use of paper forms by 4% to 6% per year, according to Norman McLeon, an industry analyst at Cap Ventures Inc. in Vienna, Va.

SmartWorks is aimed at companies that spend more than $100 million per year on printing. At the heart of the venture's service offerings is a set of what were proprietary software-based print-management tools known as SmartWorks that Standard Register developed in-house and has been furnishing to its own customers for the past five years.

Standard Register's customers include Sprint Corp. and Boston-based Liberty Mutual Insurance Cos., which use the tools for tasks such as tracking real-time document use to decide whether to keep forms on hand in warehouses or instead print them on demand.

The tools, which have been enhanced several times since their debut in 1995, are oow available on a single Web site to customers of Standard Register and its competitors. These customers can procure and manage a wide range of printed and digital documents online.

Debbie Claybaker manages forms, graphics and print services at Sprint, which spends $5 million per year on printing. She said that Sprint switched from using Moore Corp. in Toronto as its supplier to Standard Register because of its Internet-based print-management services.

"[Moore] had their own tools, but there were disconnects," Claybaker said. For example, buyers weren't able to browse an electronic catalog and then place an order with the same software application, she said.

Placing Bets

Analysts characterized the transition as a bold move, especially in the old-line printing business.

"Large printing companies have always bundled all of the costs of servicing an account with what they charge for delivering the product," McLeon explained.

By selling print management services as a separate product from the forms themselves, Standard Register is also betting it can hang on to its printing business by being the lowest-cost producer of forms, he said.



JEFF ALLEN: Standard Register's e-commerce group evolved into ASP

Other big printing companies treat their print management applications more as customer service enhancers than as a way to generate new revenue, McLeon said.

Standard Register's chief operating officer, Peter Dorsman, projected that the new SmartWorks.com unit will ring up $10 million in revenue in its first year.

Executives said that creating a separate dot-com company — complete with a different management team and new offices — was critical for SmartWorks.com to gain credibility as a neutral service provider open to all suppliers.

"Essentially, we transferred what was the electronic-commerce organization of about 70 people at Standard, and they became SmartWorks.com employees," said Jeff Allen, the firm's vice president of sales and marketing and former director of e-commerce at Standard Register.



PETER DORSMAN: SmartWorks will earn $10 million its first year

The spin-off also helped foster a culture of innovation that Standard Register lacked. "The nature of the software business is that you have to bring out release after release after release," said Dorsman. "In the traditional forms business, some of the products we sell have been around for 30 or 40 years. The whole notion of enhancing them isn't particularly important or necessary."

Congress Weighs E-Mail, Net Monitoring Legislation

Legal expert says proposal goes too far

BY JENNIFER DiSABATINO

A bipartisan trio of lawmakers recently introduced legislation in both houses of Congress that would prevent firms from secretly monitoring employees' e-mail and Internet use.

Sen. Charles E. Schumer (D-N.Y.) and Reps. Charles Canady (R-Fla.) and Bob Barr (R-Ga.) jointly proposed the Notice of Electronic Monitoring Act, which would require companies to ootify workers if their e-mail messages, Internet activity or phone usage are being monitored by supervisors.

"We would never stand for it if an employer steamed open an employee's mail, read it and put it back. It is the same thing with an employee's e-mail," said Schumer.



SEN. SCHUMER: Workers should be told of on-the-job e-mail monitoring

Legal Debate

But Marcelo Halpern, an attorney at Gordon & Glickson LLP in Chicago who specializes in Internet law, said the proposed legislation "is pretty intrusive, quite frankly, because it's trying to afford electronic-communications privacy [that's] not afforded to non-electronic communications."

For example, companies have the right to open paper correspondence without notifying the employee to whom it's addressed, Halpern said. He added that the existing Electronic Communications Privacy Act already allows employers to check e-mail.

"Certainly, monitoring of e-mail is pretty well established," he said.

The bill comes as companies are wrestling with the issue of employee privacy vs. their own liability for the e-mail and online activities of their employees. For example, pharmaceutical giant Merck & Co. in Whitehouse Station, N.J., recently announced that it had fired or disciplined an undisclosed number of employees for inappropriate use of e-mail and the Internet.

The bill would permit secret electronic monitoring if an employer has reasoo to believe that a worker is engaging in conduct harmful to the company or another employee.

One possible good result of the new legislation is that it could force companies to create monitoring policies, Halpern said. But the bill would also introduce "a level of technicality ... that'a just sort of asking for someone to mess up," he said. And that would increase the potential for litigation between monitored workers and their employers, he noted.

Patrick Hellman, director of information security at Denver-based J. D. Edwards & Co., said the legislation won't affect his company much.

"Each employee, when they're hired, within 30 days must acknowledge electronically that they have read and understand the policy," he said, and employees must review and sign the policy annually.

Data Privacy Gains Ground

The U.S. House of Representatives recently passed an amendment to an appropriations bill that would force federal agencies to show how they collect personal data from the Internet.

The amendment, proposed by Rep. Jay Inslee (D-Wash.), calls for federal agencies to advise visitors to federal Web sites that their personal data is being collected and demonstrate how it's done.

"If the federal government is collecting [information] about our personal habits, we have a right to know about it so we can stop any inappropriate invasion of privacy," Inslee said.

House lawmakers tacked the amendment onto a Treasury Department appropriations bill in a voice vote July 21. They approved the main bill in a 216-202 vote the next day. The Senate is now debating the bill.

– Jennifer DiSabatino

Delta Scraps Legacies With Huge Upgrade

Middleware replaces CORBA, NT on OS/2

BY MICHAEL MEHAN

After it's three-year, billion-dollar project to develop next-generation applications, Delta Air Lines Inc. is finally following through on its promise to send its information technology dinosaurs to the tar pits.

Terminals in Atlanta have already seen the first wave of changes: new information boards that post up-to-date flight information and details on passenger standbys and seat upgrades. Overhauls of systems at Boston's Logan International Airport, Chicago's O'Hare International Airport and New York's LaGuardia Airport will follow this fall, with most of Delta's other 22 major destinations slated for next year.

"Delta's the first I've heard posting the standby lists," said Henry Harteveldt, an analyst at Cambridge, Mass.-based Forrester Research Inc.

Meanwhile, the Atlanta-based airline also plans to launch a smart-card check-in system early next year and has started installing Windows NT servers that will let boarding agents better track passengers.

Delta CIO Bob DeRhodes will oversee the transition; his predecessor, Charles Feld, left the airline earlier this month. Feld, the founder of IT management firm Feld Group, was hired by Delta in 1997 to lead the overhaul of the airline's operations.

In January, DeRhodes was named CIO, but Feld stayed on as the company's "e-leader" to help smooth the transition. DeRhodes said it will take three years to fully implement all the planned improvements.

Delta will play the role of guinea pig for IT overhauls in the airline industry, Harteveldt said. "It's all great if they can make it happen and if they can make it happen consistently," he said. "Otherwise, customers aren't going to notice much of a change."

Estahlished airlines bave long depended on proprietary, decades-old legacy systems. Prior to the overhaul, Delta had dozens of databases, many of which couldn't communicate with one another or effectively distribute information to employees. Delta removed all of its OS/2 systems and now houses its core Deltamatic reservations warehouse on Unix boxes.

It also replaced its Common Object Request Broker Architecture with Palo Alto, Calif.-based Tibco Software Inc.'s Rendezvous messaging middleware.

Delta IT managers said the new back end will function as a single structure and open up a whole new world of applications for the company.

Ahead of the Pack

Peachtree City, Ga.-based airline analyst Jeffrey Osborn said no other major airline has been able to streamline its back-end systems to this extent or has as much ready-to-deploy technology.

For instance, Northwest Airlines Inc. struck a $5 million deal with San Jose-based BEA Systems Inc. in May to integrate that airline's disparate systems and eventually weed out its dumb terminals. But Northwest said it expects the work to take well over a year.

Delta plans to ship 11,000 Windows NT servers to its terminal agents by the end of the year, eliminating the green-screen dumb terminals that have been a staple in the airline business. Twenty-six airports already have the new servers. New screens at the terminals will allow Delta agents to identify passengers who have missed a connection so they can be rebooked for another flight before their plane lands.

Perhaps the biggest innovation for Delta passengers will be the new smart-card system, which will allow frequent fliers to swipe cards at a kiosk to get boarding passes.

The airline also plans to have new call-in reservation systems up and running in Dallas by year's end, with upgrades at 12 additional domestic centers in eight other cities to follow next year. New flight operations, cargo-handling and baggage-delivery systems are scheduled for introduction this fall.



DELTA AIR LINES will spend the next three years implementing operations improvements, from new reservation systems to smart-card kiosks

Bankers to Offer Online IDs

ABA hopes banks will take over Web transaction security

BY MARIA TROMBLY

To help banks compete against start-ups in the field of online identity authentication, the American Bankers Association (ABA) in Washington earlier this month announced the launch of TrustID, an online identification system.

According to e-strategies director Stephen Schutze, the ABA's TrustID system is an attempt to put banks back in charge of digital signature authentication. "Banks are trusted parties," Schutze said. "And banks know their customers."

Although the full details of the system haven't yet been determined, the basic idea is that banks will provide both retail and business customers with electronic IDs that can he downloaded to a computer or wireless device.

But Avivah Litan, an analyst at Stamford, Conn.-based Gartner Group Inc., said consumers are a bad bet for digital certificate programs. "For TrustID to be successful, you have to get consumers to understand it and want it — and there's no call for it," she said. "And if they're not going to use it, the merchants aren't going to use it."

Instead, Litan said, merchants turn to third-party vendors like Mountain View, Calif.-based CyberSource Corp., which offers fraud-detection services that don't require customers to first download digital certificates.

B2B Users More Likely

The business-to-business space is a more likely candidate for digital certificates, said Litan, because businesses deal with higher-value transactions and have more to fear from fraud.

The processing and verification work for TrustID will be done by Salt Lake City-based Digital Signature Trust Co., which will serve as a central clearinghouse for the system, Schutze said. Details of the TrustID process should be finalized by year's end, he said.

Cybercertified

How Digital Signature Trust's (DST) infrastructure works:

1. A subscriber (a consumer or business) applies to a bank for the digital certificate.
2. The bank verifies the identity of the subscriber and issues the certificate.
3. The bank registers the certificate with DST.
4. The subscriber digitally signs and sends an electronic message to a merchant or trading partner.
5. The merchant or trading partner checks the subscriber's certificate with DST.
6. DST validates the subscriber's certificate and responds to the merchant or trading partner.
7. The merchant or trading partner approves or declines service to the subscriber, based on the certificate validation results.

For more information, visit: www.digsigtrust.com

Feds Warn of Fake Sites

Banks fear spoofers getting customer info

BY MARIA TROMBLY

A cracker doesn't have to break into a bank's computer to steal account numbers and access codes. It may be enough to set up a spoof Web site that closely mimics a real bank's site, according to a warning issued two weeks ago by the federal Office of the Comptroller of the Currency (OCC).

Some customers have provided financial information to sites that they thought were legitimate Web sites, according to OCC spokesman Dean DeBuck. The fake sites were close — but not exact — copies of the real bank sites, he said.

So far, the only losses that the OCC is aware of involve private information such as addresses, said Clifford Wilke, the agency's director of bank technology. No thefts have been reported yet of personal account information or access codes.

To keep an eye out for fraud, banks should make sure that there aren't any Web sites with similar names that are luring consumers, instead of waiting for customers — who may not realize they've been duped — to complain, said DeBuck.

Companies can take legal action against Web site spoofers, DeBuck said. For example, *wwwbankofamerica.com* — the same as the real site's address, but without the dot after the "www" — was taken down after a few unsuspecting consumers were taken in, he said.

But banks aren't the only targets. X.com Corp.'s PayPal Web site was spoofed recently with PayPai.com, said Chris Musto, an analyst at Gomez Advisors Inc. in Lincoln, Mass.

According to Vince Sollitto, a spokesman for Palo Alto, Calif.-based X.com, the phony site was shut down "within hours" of going public, and no customers lost money.


MultiS
DVI/D-SUB



I bring you face-to-face
with new opportunities.

New possibilities.
New ideas.

I help you see
with more clarity.

I help you focus on higher goals.
Move into unexplored territories.

I'm your monitor.
I help you find the answers
to your questions.

You look.
But do you really see?
That's why the two leaders in electronic visual display technology have come together: to make monitors that expand your vision. That help you see. See more. See anything. See everything all at once. Monitors that take you anywhere. That help you do more than you ever imagined. With our combined R&D, engineering and manufacturing power, NEC's LCD leadership and Mitsubishi's patented flat-screen CRT technology, the possibilities are endless. Let's begin.
www.necmitsubishi.com

nc LCD1525X

NEC/MITSUBISHI
NEC-MITSUBISHI ELECTRONICS DISPLAY
SEE MORE.

©2000 NEC Mitsubishi Electronics Display of America, Inc.
All rights reserved.

WORKSTYLES

What It's Like to Work at . . . Petsmart.com

Interviewee: Eric Kidd, chief technology officer and vice president of engineering
Company: Petsmart.com Inc., an online pet supplies store
Main location: Pasadena, Calif. "You can see the [Rose Bowl] parade from our office windows."
Number of information technology employees: 33, divided into five groups – Web engineering and e-commerce engineering, quality-assurance engineering, operations engineering and information systems.
Number of employees (end users): 110
Average age in engineering: About 27
Dress code: Casual
Workday: Varies. "On average we get in around 9 a.m. and leave about 7 p.m. When we're not on a big project, it's about a 50-hour week, and we're flexible on our start and end times. But we just came off of a big project with a very aggressive deadline, and we were easily putting in 80-hour weeks. People were here 12 hours a day, seven days a week. Some put in in excess of 100 hours a week."
What was the project? "A redesign of our order-management system, which interfaces back to [parent company] Petsmart's inventory management and fulfillment and distribution systems. It also involved updates of the commerce functions on the Web site, like the shopping cart and checkout."
Favorite stress busters: "Rubber-band wars. There was a big war between network engineering, e-commerce and QA, and I have seen a lot of innovation in the design of rubber-band weapons."
How are you rewarding people for the hours they put in? "We gave everyone $100 American Express gift certificates. . . . Today [July 21], we're having a Mexican-themed party to celebrate. . . . And we're working on giving people some time off. We'll spend $1,500 to $2,000 per person to take the team for a paint-ball day, a trip to [a local theme park] and some other reward that we'll give to each person."
Initial public offering plans: "We recently filed the SEC Form S-1, the first step in taking the company public."
How formal are employee reviews and IT career paths? "[Human resources] is putting together a formal employee review practice."
Compensation and bonuses: Stock options for all employees and "competitive compensation." Spot bonuses include project completion rewards such as a Palm V and a trip to Las Vegas awarded to each engineering team member after a site relaunch last fall.
Office decor: "Modern industrial. All of the walls are different colors – yellow, purple, green, eggshell, black – which is a good break for the senses when you're working long hours. We have windows along all the walls with a nice view of the San Gabriel Mountains. . . . In the middle of the suite, we have a kitchen area with a banana-shaped bar."
Must people carry beepers? Cell phones? Yes. "We used to get beeped pretty frequently after work hours, but we have really worked to stabilize the site, and now maybe only one person a week gets paged outside of work."
In-house cafeteria/food service: "No, but we have free food in the kitchen area. . . . And during the project period, we brought in lunch and dinner for the team every day."
The one thing everyone complains about: "That we don't have cots here for them to sleep on."
Where the office gossips: "We have a terrace outside our suites that overlooks a courtyard, and we recently put patio furniture out there."
Office mascot: Millie, the CEO's dog. "She comes in quite a bit."
Little perks: "We have a Bow-Wow every two weeks, where we have beer and chips and salsa and celebrate birthdays with a cake."
Would employees feel comfortable e-mailing the CEO? "Yeah. They feel comfortable shooting rubber bands at the CEO."

– Leslie Goff (lgoff@vnetcom.com)

JIM CHAMPY

A lull for service firms

A NERVOUS INVESTMENT fund manager called me recently, wondering whether demand in the IT services industry was slowing. Had the long-predicted post-Y2k crash finally hit? Several major systems-integration firms reported lower-than-expected second-quarter earnings. The stock market extracted its penalties for those failures

to meet analysts' expectations. Then Computer Associates announced "disappointing" results. Whack: 42% off its share price in one day.

It seems strange to have a drop in the IT services business when Internet and wireless technologies offer such opportunity for growth. But I believe it's only a temporary slowdown, driven by a massive restructuring of the IT services and products industry. Here's why:

The lull isn't coming from the end of Y2k conversions — unless you're ooe of tbose companies that foolishly built a large practice or product set just for Y2k readiness. Rather, the slowdown comes from companies stopping to consider how the Internet will really affect their businesses and how their strategies and operations will have to change.

Most companies haven't figured this out yet and have become further confused by the e-commerce failures in many retailing ventures. Eventually, tbeir legacy or infrastructure systems will have to go through another round of massive change to operate in electronic channels. But most companies are hesitant to spend on new ERP systems until they're more confident about what their businesses really need.

Once ERP work picks up, it will be done through ASPs.



One sign that we're only in a temporary slowdown is that most IT services and product companies are still growing, but not as quickly as they did in the past couple of years. Every IT company and organization I know is still looking for good people.

Wall Street analysts had become used to growth rates of 20% to 25% a year — or even greater for some smaller start-ups whose businesses were based on Internet-related work, like Web-site design or Ioternet-strategy consulting. But many of these small companies — several of which had meteoric IPOs — won't grow much larger. And it's not because business isn't out there.

First, the market has become much more competitive, with lots of companies doing Internet-related work. Second, most small companies woo't grow to any scale because they lack experienced sales and marketing capahilities and their service/product offerings are too narrow. For them, especially those that are publicly held, slow growth will mean consolidation.

The failure of these smaller companies to grow and the slowdown in the growth of some larger companies shouldn't disguise the fact that there's a huge amouot of IT work to be done. There's too much firepower in the Internet and wireless technologies. Companies just have to figure out how to use it.

But how will that work get done? That's where industry restructuring comes in.

Once ERP work picks up, it will he done through application service providers (ASP). ASPs will offer new ERP capabilities at lower and variable costs. But it's naive to think that to be an ASP, all you have to do is offer old ERP systems on a different technology platform. I believe the winners in this part of the IT industry have yet to emerge.

There will also he many speciality firms offering low-priced telecommunications and computing services. But soon, these firms will be seeking content to boost their profits. Expect to see a lot more process outsourcing that includes embedded IT operations. For example, British aerospace company BEA Systems Inc. just formed a venture with a start-up, Xchanging, to do all its human resources work.

And will tbere be a role for systems integrators in what appears to be an emerging world of specialist players? You bet. Someone still must put all this technology together and make it work. The Internet hasn't made life easier yet. It's just made more things possible. And a pause to consider those possibilities makes sense.

Champy is chairman of consulting at Perot Systems Corp. in Cambridge, Mass. He can be reached at jimchampy@ps.net.



Staying On Track

Here's how to keep an IT project on course when the business sponsor suddenly leaves. By Minda Zetlin

A FEW YEARS AGO, TONY MCDONALD WAS Budget Rent a Car Corp.'s director of financial systems and in charge of creating new reporting technology for the Lisle, Ill.-based car rental agency. The project was well under way when the corporate controller who had sponsored it left the department.

Suddenly, McDonald says, "we had this reporting means no one wanted."

McDonald's team eventually completed its work. But without any business advocates to press for it, the new system was never put to use. Eventually, he says, "they wound up scrapping the whole thing."

No information technology professional wants to see months of work go down the drain when the business sponsor moves on. But with such high executive turnover rates these days, there's a real danger that a project's business champion may be promoted, transferred or lured away well before the completion date.

So, how do you keep a project on track when the business manager changes? It's never easy, but some IT executives who've been there offer some hard-earned wisdom on how to minimize the disruption.

By the time the key business executive sponsoring an IT project announces his departure, it's already too late to take action. Instead, a project should be structured from the beginning to minimize the impact of such a change.

"Strategy is the key," says Steve Streitmatter, managing director of system design and integration for the ground operations division at Federal Express Corp. in Memphis. Ideally, he says, every IT project should serve a strategic company goal, such as helping it become the low-cost provider within its market.

An IT project that serves a company's stated strategy has better odds of surviving, he says. "If it's one executive's pet project, you've got a much bigger chance of it failing when that executive moves on," he says.

Making Your Case

The second key element, says Streitmatter, is to write a clear, objective business case for the project. "It should document the cost, the return on investment and the reason for doing it, as well as the risks of not doing it or delaying it," he says. If a project serves strategic corporate goals and if the IT manager in charge of it can present a solid business case for it, that should help the incoming business manager see the logic behind supporting the project.

Streitmatter knows firsthand the advantages of following these steps. He's currently involved in a multiyear technology project that's aimed at helping FedEx's operations people schedule employees and capture delivery data. Since its inception, the project has seen its business sponsor change more than once. But thanks to a sound strategy and a well-developed business case, the project has stayed on course.

Some IT and business managers prefer to act as the conduit for all communications between IT and business functions. But this strategy can be a huge liability when management jobs change hands.

"I think the hierarchical organization, where the only point of contact is at the top of the pyramid, is a real shaky project structure," says Doug LaBoda, CIO of claims services at Travelers Property Casualty Corp. in Hartford, Conn. Teamwork between the IT and business units, says LaBoda, "needs to be two hands clasped together, with all the fingers intertwined."

LaBoda says he has been fortunate enough never to lose a business liaison contact while a project was under way. But because there are many points of contact between his IT managers and their business counterparts, he feels certain it wouldn't present much of a problem. "Within our claim services organization, I have a relationship not only with the CEO but probably with all of his direct reports, and with many of their direct reports as well," he explains.

Once an IT executive discovers that a project's business sponsor is leaving, the best response is to get the new manager and potential users interested in the project as fast as possible before it loses its focus and sponsorship.

Steve Bublak, a consultant at New York-based PricewaterhouseCoopers, is working on a campaign management project at a national direct marketing company where the CEO recently resigned. The new CEO, who has a background in finance, is slashing expenses and has already killed one major technology endeavor. The future of Bublak's project is uncertain.

If it does survive, says Bublak, it will likely be because it was the result of a highly successful system demonstration to future end users that was quickly organized by the vice president of IT strategy.

"He was saying, 'Let them see it; let them taste it,'" Bublak recalls, and the demonstration turned out to be a huge success.

Zetlin is a management writer and author of Surviving the Computer Time Bomb *(Amacom, 1999).*

DIARY OF AN ONLINE JOB SEEKER

The Internet is all the rage for technical recruiting, but you can quickly find yourself abused by headhunters. Learn how to make the experience more rewarding.

By Deborah Radcliff

MEET BRAD MARTIN (not his real name), an insomniac whose sleep deprivatioo recently cost him his joh at a large telecommunications company near his Pleasanton, Calif., apartmeot.

Not that he minded. Martin was itching to move from his senior help desk analyst position to desktop troubleshooting. But his company had pigeonholed him (and his 250 peers) into telephooe support for life.

So in early May, Martio signed up for $240 per week in unemployment wages and started hanging out at online joh boards during those quiet hours when most of the world sleeps.

Martin had heen pegged into help desk work for three years — far too long, he says. He needed a new start, in a job that would offer him the opportunity to move to the next level: hands-on desktop support/analysis. It couldn't he a sweatshop like the service provider he'd just left. And while he wasn't tied to working close to home, he did hope to find a job that would he forgiving of his oocturnal body clock.

So he started a passive search for eotry-level desktop support jobs, which didn't pan out, he says.

"I'm capable and qualified for desktop work, but I've beeo answering phones for three years," he says. "Wheo dealing with online agencies, they put a rubber stamp on your head and say you're a phooe guy. When I told online headhunters I waso't available for phone work anymore, they stopped calling me."

Martin learned some important lessons about the online job-huoting game. He learned about résumé formatting and keywords for job searches. He learned to educate disorganized recruiters. But the most important lessoo he learned was that passively posting his résumé oo the Web was like throwing himself to the headhunting wolves.

On Juoe 27, Martin started a oew joh at an investment banking firm in San Francisco. Now he's working nights, with the promise of a promotioo to desktop support at the end of three mooths.

Not only did he keep a diary of his job search experience, but he also saved all his e-mail.

WEEKS 1 & 2

Martin steps into the headhunter melee. In the two weeks after he posted his résumé at his favorite Web site at the end of May, Martin got only 12 responses, none of which led to interviews. But those who did call were pushy, aggravated, overwhelmed and disorganized, he says. That doesn't surprise Mark Mehler, co-author of a self-puhlished guide to online joh huoting and resources, titled *CareerXroads*.

"The Internet brings tremendous speed. The recruiter's beeo handed a job descriptioo on the hack of a napkio and told to make sense of the insanity," Mehler explains.

Tuesday, May 16: Martin receives congenial e-mail from headhunter Meenal. (Last names of recruiters were withheld for this article, since they wereo't interviewed directly.) "I saw your résumé on Dice and would like to run an exciting positioo by you," she writes. "This positioo is at a start-up, and they are doing some very exciting work." Martin notes the douhle use of the word *exciting* and leaves a message on Meenal's voice mail.

Friday, May 19: Martin gets a call from Sally, another headhunter. "She was jaded — told me that maybe she can put me in a purchasing position," an area in which Martin has no experieoce at all. "This

No Job Seeker's Paradise

Ask recruiter Susan Stewart, a senior vice president at Tacoma, Wash.-based Onsite Inc., and she'll tell you that online job postings get her 150% more responses than traditional print and radio ads do.

Rose McGinnis, vice president of worldwide recruiting at Unisys Corp. in Blue Bell, Pa., says the cost per hire for Internet recruiting runs 50% to 60% lower than that for traditional media.

But both say they won't hire exclusively using the Internet anytime soon. In fact, they stress that the Internet is an adjunct to traditional hiring outlets, not a replacement.

Take employee referrals, for instance, which Forrester Research Inc. reports account for 40% of new information technology hires. According to Forrester, newspaper and magazine advertising still account for 29% of job hires, while the Internet catches only 4% of new hires.

"If you know someone inside the company you want to go to work for, you'll get hired faster than anyone. The Internet isn't going to change that," notes Mark Mehler, co-author of a guide to online job hunting and resources, titled *CareerXroads*.

"If you can't refer in, you still have to get in front of hiring managers, so you still need to send your resumé direct to get their attention," he says. – *Deborah Radcliff*

was completely outside my field of experience and would hurt my career. She seemed to have no concern about my future. I never talked to her again."

Monday, May 22: Martin and headhunter Meenal finally hook up. "She starts pressuring me right off. 'When can you start? Yada, yada.' She's hitting me with questions and demands, rapid-fire, like a machine gun," Martin says. "I couldn't get through to her that I wanted to do other interviews before I even thought about accepting anything. She was so impatient and so presumptuous, I nearly reported her to her manager."

WEEK 3

Thursday, June 1: Martin pulls his résumé off the Web and spends another week rewriting it. Instead of using a functional format (basically, a listing of technical skill sets only), he makes it experiential (including job history and experience).

Martin would have been better served if he'd used a site that e-mails listings for job types users specify themselves, suggests Mehler. He says that 322 of 2,000 job boards he researched offer a "push" application that asks for a skills list and an e-mail address. The application matches those skills to available jobs and pushes those jobs to a potential applicant.

"[Martin] could have selectively responded instead of becoming a bull's-eye for every headhunter surfing the Web," Mehler explains.

Also, he says, job seekers should look at the privacy statements of job boards before placing their résumés. If a job board offers no way to put the job seeker in the driver's seat (such as point-and-click options to tell the job board who's allowed to see a résumé and who isn't), it shouldn't be in business, he says.

WEEKS 4 & 5

Martin takes a new approach: He decides to go to the jobs instead of waiting for them to come to him. But the results are pretty much the same. He responds to 80 job postings between June 5 and June 13, which results in 11 calls and only one interview.

Here are the highlights:

Sunday, June 5, 1 a.m.: Martin the insomniac conducts searches on his favorite online job site using the terms *not phones* and *not help desk*. Throughout the week, he mails a snowstorm of 80 résumés (mostly to headhunter-placed postings) during his nocturnal prowlings.

Monday, June 6: Headhunter Julie responds, asking him to fill out papers even though she "doesn't have a specific job opening" for Martin. He still isn't in the driver's seat. "I told her I don't want to waste an afternoon giving out personal information when she doesn't have a specific employer lined up," he says.

Monday, June 12: Headhunter Brian calls and sets up an interview for that day for a desktop job at a nearby law firm. Before Martin leaves for the interview, headhunter Brian calls back and apologizes. The job got filled.

Thursday, June 15: Headhunter Brian e-mails Martin at 11:21 a.m. about another job. At 1:04 p.m., headhunter Brian sends another e-mail. Again, the job has been filled. "[Brian] said, 'We're in a fast-moving industry, but it's usually not this fast,' " Martin says. Because Brian was so honest and willing to help Martin find a job that would promote him off help desk within three months, Martin decides he still has a good feeling about him. So he responds, "Thanks, I'm still here."

Monday, June 19: Martin gets a call from headhunter John, who Martin thinks sounds 12 years old. John has lost Martin's résumé, which Martin had sent the day before. And now he can't remember why he's calling Martin.

Wednesday, June 21: Headhunter Brian calls back. He's got a job opening at an investment banking firm: a 12:30 a.m. to 11:30 a.m. rotating shift four days per week — the perfect schedule for an insomniac. Martin decides that even though the job is still on a help desk, he'll go for the interview tomorrow because of Brian's promise of an eventual promotion.

Thursday, June 22: Martin finally gets some face time with a potential employer — the investment banking firm Brian called him about yesterday.

While the Internet may mitigate other elements of the job search — going to cattle calls, sending résumés and thank-you notes and making preinterview and postinterview telephone calls — the face-to-face interview is still the most important part of the job-hunt process, says Mehler.

Martin says this was the turning point in his job search. He immediately liked his prospective boss. In fact, Martin remembers interviewing with him on a previous job search (for a position as a help desk manager) a year earlier.

This prospective boss says he's all for promoting his employees and asks many questions about what Martin wants to do a year from now, two years from now and so on.

Martin decides he wants this job. So after the interview and a few follow-up calls with headhunter Brian, Martin fills out the required paperwork. He's now happily ensconced in his new job as a help desk analyst, with the promise of a promotion to desktop support in three months.

"It's been quite an adventure," he says, fresh from signing his hiring papers. "Sixty-nine out of 80 of my résumés were ignored. And people in the recruiting business who did call are so buried in piles of résumés and positions that I found myself hand-holding them.

"Still, searching for opportunities online with a few well-chosen keywords is much easier than from newspapers," he adds. "And respooding to online postings is less frustrating, since it's much easier than faxing résumés or going in person to fill out applications at a cattle call." ▶



POLLY BECKER

Manufacturing Execution Systems

BY JAIKUMAR VIJAYAN

To help manufacturing companies operate as efficiently as possible, most modernized firms use what are called manufacturing execution systems (MES).

These plantwide systems are used to keep track of production schedules, inventory availability, work in progress and a range of other operations management-related information flowing to and from the shop floor.

If implemented correctly, an MES can manage, initiate, respond to and report on each of the primary production activities of a plant.

For instance, a manufacturer of made-to-order electronic goods can use an MES to optimize materials availability, labor and shipping resources by tracking production units, components and subassemblies from the time the order was placed through delivery.

Decisions on the Shop Floor

Delivering minute-to-minute shop-floor information is vital now that the Internet is driving more of a build-to-order manufacturing model, says Bill McSpadden, an analyst at Plant-Wide Research Group in Billerica, Mass.

As a result, companies that want to deliver on these modules need to have access to end-to-end decision-making information that drills down to the shop floor, he adds.

"If you look at the success of companies such as Dell, you see their front-end Web presence is supported by a back end that goes all the way into their plant floors," says Josh Greenbaum, an analyst at Enterprise Application Consulting in Berkeley, Calif.

MESs have been used for several years now — mainly in process industries — to support key operations management functions ranging from resource allocation and data acquisition to maintenance management, quality cootrol, performance analysis, labor management and even paper reduction.

However, there has been little effort, especially oo the part of discrete manufacturers, to collect and make this kind of plant-floor information available to plant managers and to enterprise management systems, analysts say.

"For years, MES was considered a point solution on the factory floor," says McSpadden.

Indeed, most supply-chain integration efforts have focused primarily on the deployment of business management applications such as enterprise resource planning (ERP) and customer relationship management (CRM) systems without addressing operations management needs, says Andy Chatha, president of ARC Advisory Group Inc., a manufacturing consultancy in Dedham, Mass.

It's only by integrating a plant-floor system with the rest of the enterprise that companies are able to get the kind of holistic view that's needed to support a build-to-order model, he says.

"There's always been this kind of a dividing line" between plant-floor systems and the rest of the enterprise, Chatha says. "ERP vendors don't understand plant-automation vendors and vice versa," he says.

But that's beginning to change, as reflected by the growing trend among manufacturers to move to an Internet-enabled business that emphasizes low inventories, short cycle times and quick order execution, say experts.

Increasingly, there's a need for a high degree of real-time and near-real-time flow of information spanning plant-floor operations, order entry, planning and scheduling, CRM and financial operations.

As a result, MESs are being viewed as the vital missing link for tying plant-floor information with business management information provided by applications such as ERP and CRM, McSpadden says.

No Easy Task

Despite the benefits, deploying an MES and booking np the system with the rest of the enterprise is no easy task, analysts say.

This is especially true in enterprises with a mix of vendor platforms and legacy systems, such as an IBM AS/400-based MRP II system connected with a Digital Equipment Corp. VMS-based order-procurement system.

Hooking an MES into an enterprisewide system requires very tight integration between systems that are as varied as order entry systems, product configurators and planning and control systems, as well as sales force and delivery systems.

Each software component in an integrated enterprise should not only interface with the other ones but also share information and communicate in a common format.

Bridging the Gap

Bridging the gap between the two sides means integrating software, networks, protocols and languages that often bear little resemblance to each other and require layers of middleware and connectivity tools.

"MES systems have to be compatible with the existing environment. Very often, that environment is a hodge-podge of different systems that need a lot of integration," Greenbaum says.

DEFINITION

Manufacturing execution systems are used to help manufacturers optimize production by delivering real-time operations information to and from the factory floor to plant managers, who are responsible for various activities. These functions include resource allocation, quality control, performance analysis and labor management.

Examples of MES at Work

A manufacturer of custom-built products improves on-time delivery:

MESs allow for the tracking of specific customer orders and materials bills at the unit and component levels. This permits planners to know exactly where each unit is in the production cycle and what materials are needed and when. It also allows companies to reduce the inventory they hold and notify planners when there are product shortages. In addition, MESs enable planners to better schedule resources, materials, testing facilities and delivery infrastructures. Customers can find out exactly when to expect their products.

Manufacturers manage changes in the production process:

An MES can help companies maintain records of products and processes by unit, subassembly and lot. At each stage, an MES helps companies gather information on test results, quality results, operators in charge and whether the product is being built in compliance with mandatory requirements. Complete device and product histories and granular details on how the product was built allow manufacturers to hone in faster and more accurately on any required changes or production rerouting.

A manufacturer that outsources production of components to contract manufacturers:

Provides traceability of all the parts and subassemblies supplied by third parties. An MES allows a manufacturer to keep track of changes.

–Jaikumar Vijayan

■ *Are there business terms you would like to learn about in QuickStudy? Please send your ideas to quickstudy@computerworld.com.*

Dear Career Adviser:

I'm a 35-year-old with a Ph.D. earned in Russia. I'm a skilled programmer with experience in C, Java, Web technologies and various databases, plus project leadership experience. I dream about a position that uses my abilities as a team manager and computer technology specialist, particularly in the field of e-commerce. I'm ambitious and used to hard work. Being from outside the U.S., would I have to start out as a programmer? What's the best plan?

— AMBITIOUS IVAN

Dear Ambitious:

The answer depends in part on how a potential U.S. employer evaluates your foreign-earned credentials and on what you need to learn to be really skilled in a specific product or architecture.

Depending on the complexities of the projects you've done and the Web technologies you've worked with, you should have no problem finding good opportunities, says Jeremy Barnaby, a technical talent scout at Webridge Inc., an e-commerce infrastructure company in Beaverton, Ore.

If you were to work at a consulting company where application solutions are built from scratch every time, the technology ramp could be shorter if your Java and Web technology skills are strong.

However, "if Ambitious were to join a company like Webridge, which has built its own proprietary [object-oriented] framework in Java, he would start temporarily in an individual contributor role — that is, rolling up his sleeves and learning the product by slinging code as a programmer," says Barnaby.

If you have your heart set on a company, architecture or product set, learn as much as you can before you start interviewing. Doors open when companies see that you don't need training.

Dear Career Adviser:

I left college with a 4.0 GPA and started working at a start-up two months ago at a salary of $40,000, but with no bonuses, stock or other perks. I even have to pay for parking and part of my health insurance. This job gives me great experience. I work with Active Server Pages and SQL Server as a Web developer, have installed two firewalls and written some C++ and Java. In fact, I'm responsible for the company's most important Web projects. This small company has fewer than 20 people and no formal guidelines for reviews. When should I try to negotiate a better deal?

— JUST ASKING



FRAN QUITTEL is an expert in high-tech careers and recruitment. Send questions to her at www.computerworld.com/career_advisor

Dear Asking:

Companies with fewer than 20 people are under no legal obligation to provide the same benefits as larger companies. In fact, if the company goes belly-up you might not even be entitled to COBRA coverage, which lets you continue your health benefits for 18 months.

However, you can immediately ask to be treated the same as employees joining the company now if they're getting stock and other benefits that you aren't.

Also, based on your superior performance, you should request a review after just six months. If your strategy flips to "more money or else," you might gain clout in the negotiation but alienate your manager entirely.

Dear Career Adviser:

I'm a lead architect with in-depth knowledge of Unified Modeling Language, Java, C++, XML, Common Object Request Broker Architecture, Distributed Component Object Model technology, Remote Method Invocation technology, Java 2 Enterprise Edition, Oracle, messaging technologies, Object Transaction Services and Jini. I pick up technologies easily, and I've shipped a lot of products that have created more than $100 million in yearly sales, yet my salary has stayed in the low $100,000s. I detest politics, but I like mentoring, giving demonstrations and shipping products on time. I want to earn more and stay strong technically and as a teacher. Are my only options the Big Five or consulting?

— TECHNICAL GURU

Dear Guru:

Eric Sigurdson, an executive recruiter at New York-based Russell Reynolds Associates Inc., says that if you're smart, aggressive and a good communicator, several paths are open to you. You can move toward a chief technology officer or vice president of engineering role at a small technology company, where you would build and manage a large organization and bank on an upside from your stock.

You can also join a Web consulting company like Boston-based Circles or Chicago-based MarchFirst Inc.; become a solutions architect at a firm where your compensation includes a variable component based on revenue from sales to clients; or go to a Big Five firm. Some of them have incubators and new-company "accelerators," where you can have the excitement of a start-up within a more mature organization.

Even if you hate politics, you need to groom yourself politically to get an upper-management spot. To do this without endangering your job, start serving on technical organization boards and speaking at major conferences. ▶

BRIEFS

McAdam to Lead F5

John McAdam last week took control as president and CEO of F5 Networks Inc., a Seattle-based maker of Internet traffic and content management products. McAdam was formerly general manager of IBM's Web server sales business unit.

Big Three's Covisint Exchange Loses a CEO

The Big Three's automotive exchange, Covisint, lost one of its three co-CEOs last week. A. Alan Turfe is set to leave Detroit-based Covisint today to head to MetalSpectrum, an Atlanta-based online metal exchange. Turfe represented Detroit-based General Motors Corp. at Covisint. Both Dearborn, Mich.-based Ford Motor Co. and Stuttgart, Germany-based DaimlerChrysler AG also have co-CEOs involved in the venture. A replacement for Turfe hasn't been named.

New TV Technology May Take Ad Dollars

Smarter devices are expected to dramatically affect the way viewers watch television, pulling $18 billion away from ordinary TV advertising revenues in the next five years, according to analysts at Forrester Research Inc. in Cambridge, Mass.

However, during that five-year period, smart devices such as interactive program guides, personal video recorders and interactive digital cable boxes will create $25 billion in revenues as viewers interact with their televisions. Forrester predicts that 34 million U.S. households will use interactive program guides by year's end.

NowDocs Speeds Delivery to Asia

NowDocs.com Inc. in Aliso Viejo, Calif., last week introduced a same-day, digital print-and-delivery service to Asia, with four-hour delivery to Hong Kong and next-day delivery to major business markets throughout the Pacific Rim. Same-day service starts at $29.95 for a 10-page black-and-white document that's delivered digitally and then printed and delivered to Hong Kong via service from Memphis-based Federal Express Corp.

Immedient Lands IBM Executive

Denver-based Immedient Corp. announced last week that Roy King will be its new president and CEO. King, formerly vice president and general manager of several large divisions at IBM, was most recently head of IBM's $3.5 billion consulting and integration services business in Europe.

Immedient develops Internet applications such as technology enablers for business.

USinternetworking Names Stern as CEO

USinternetworking Inc. has appointed Andrew Stern as its new CEO. Stern was chief operating officer and executive vice president at the Annapolis, Md.-based application service provider. He replaces Christopher McCleary, who will remain as chairman of the board of directors.

Qualcomm to Spin Off Business Unit

Qualcomm Inc., a San Diego-based wireless device and network provider, announced last week that it will spin off its integrated circuits and system software business.

The spin-off, which is being called Spinco until a permanent name is announced, will develop and deliver wireless semiconductors and software for handset and network manufacturers. The spin-off is expected to be completed by August next year.



AT FOUR-THIRTY ON A SUNDAY MORNING, A *WEB SITE* FRIES.

At eight-thirty a.m., people file into a conference room.

The IT director wants to know what happened.

The server vendor says it's an app problem.

The front-end vendor says it's the database.

The database vendor insists it's the servers.

All told, there are twelve different vendors. Twelve.

The IT director wants to know who's

responsible for making all this stuff work together.

After a long, ugly pause, the guy next to her

whispers into her ear, "You are."

THAT'S WHEN IT HITS YOU. YOU ARE *SO READY* FOR IBM



>> fact

A single Internet transaction can involve dozens of systems. IBM has the products and services that can help prevent disaster. MQSeries® middleware, Tivoli® management software and IBM Global Services integration experts help integrate, operate and protect an otherwise vulnerable e-business infrastructure.

ibm.com/e-business/infrastructure | e-business infrastructure

IBM, MQSeries, Tivoli, the e-business logo and *That's when it hits you. You are so ready for IBM* are registered trademarks, trademarks or service marks of International Business Machines Corporation. © 2000 IBM Corporation.



remote access Untie them from their workstations, and watch their productivity soar. We offer secure remote access solutions that make it easy to get on the network from outside the office. For the flexibility they want, and the productivity you need. Because it's hard to think outside the box when you're working in one.

sbc.com | 1-888-727-3848

Ameritech | SBC global network

Copyright © 2000 SBC Communications Inc. All rights reserved.

Taming the Wireless Wilds

Wireless applications are relatively new to most organizations. But as early pioneers have discovered, the deployment of these systems introduces a raft of new managerial, technical and staffing challenges for IT leaders. *Computerworld* provides some answers in this special report.

CONTENTS

Wireless Today . . .



JEFFERSON STEELE

J. P. Garvin and Ross A. McKenzie of Johns Hopkins

While wireless LANs are just starting to pop up in business, Johns Hopkins University's School of Public Health is working on its second full-scale wireless LAN upgrade. The original wireless LAN pilot with 40 students has grown to 500 students today.

PAGE 44

. . . And Tomorrow



BEIO HORN

Jack Harris of Dr Pepper/Seven Up

While comedians joke about "smart" refrigerators and televisions dulong it out for control of the cell phone, smart soft-drink machines are already going online wirelessly. Soft-drink maker Dr Pepper/Seven Up is piloting this technology to keep a remote eye on its vending machines.

PAGE 44

Commanding the Wireless Helm



LARA JO REGAN

Ken Spenchian of MGM Studios

IT executives and analysts say there are some pioneering best practices for managing wireless rollouts, including running short trials and scrutinizing security. They provide tips for getting yours under way.

PAGE 49

High Wireless Act



TERRY CLARK

Lisa Picone and Charles Bartel of Carnegie Mellon

Adopting wireless technology presents new challenges for IT staffers, who must measure success by confronting and conquering the physical environment. Then there's the issue of having the right skills available within your IT department.

PAGE 49



Public Health are old hands

complete LAN upgrade

Wireless Today . . .

Johns Hopkins University is working on its second full-scale wireless LAN upgrade. By Sami Lais

THE FREEDOM promised by wireless networks — computing wherever you roam — is so compelling that the technology has remained a hot topic, even though few organizations are actually using it. In 1997, Johns Hopkins University's School of Public Health (SPH) became one of those few.

What began as a wireless LAN pilot with 40 students has grown to 500 students today, fueled by the SPH's cash rebate program for students who buy laptops and another program for lending wireless LAN PC Cards.

"Of 600 new students [who will enroll this fall], half will either buy laptops or bring them with them," says Ross A. McKenzie, the SPH's information systems director. "By the time they leave, 80% will have them."

So, this summer, the school will upgrade its wireless LAN to the faster 802.11b Direct Sequence Spread Spectrum (DSSS) standard that was

Dr Pepper is piloting wireless technologies to monitor its vending machines. By Sami Lais

WHILE COMEDIANS joke about "smart" refrigerators and televisions duking it out for control of the cellular phone, smart soft-drink machines are already practicing going online wirelessly to report data that will save money for soft-drink vendors.

Dr Pepper/Seven Up Inc. in Plano, Texas, is a few weeks into a pilot in which a dozen vending machines are keeping Rick Harris, manager of channel research at Dr Pepper, apprised of how sales are going.

"For the first time, we're getting real data rather than ballpark figures on exactly what's going through those vending machines," Harris says.

The company owns 17 brands and franchises bottling territories for each, a Dr Pepper spokesman says. Tracking sales of a single brand at different locations and for different demographic profiles has been impossible, Harris says. Data is collected, be says, but it's "inconsistent from bottler to bottler."

Pilot Installation

For the pilot, Dr Pepper is using VendCast software, hardware and services from Isochron Data Corp. in Austin, Texas. Dr Pepper uses the VendCast sales and operations module. Other modules include dispatch, which is used for truck routing; cash accounting; and maintenance.

Isochron installs VendCast hardware — which includes its own software — and a Motorola Inc. ReFlex protocol two-way paging device in each vending machine. Harris says installatioo takes about 12 minutes and costs $340, while monitoring is $6.50 per month.

VendCast software collects inventory, sales and machine-health data via a connection to the machine's serial port.

Two-way paging lets signals shift between simulcast and local mode, or multi- and single-channel broadcasting, allowing immediate signal and response between vending machines and Isochron's Network Operations Center (NOC).

VendCast servers at the NOC typically poll vending machines daily, says Aruni Gunasegaram, president and cofounder of Isochron. A dome antenna atop the vending machine allows broadcast and receptioo in the 900-MHz frequency via the narrowband personal communications services wireless network run by Jackson, Miss.-based SkyTel Communications Inc. In sites with several machines, all report to a central unit, from which all data is sent, Harris says.

Isochroo aggregates the data and stores it at the NOC. On PCs with VendCast client software installed, users go to personalized Web sites and use browsers to access their data, whicb is secured by 56-bit Secure Sockets Layer encryption from VeriSign Inc. in Mountain View Calif., Gunasegaram says. Users can query their data, view preconfigured reports and generate new reports. They can also download data for import into their own applications, she adds.

Isochron's similar PolarCast system is in use by bagged ice vendors, Gunasegaram says. When internal machine temperatures rise, the ice machine generates an alarm to summon an attendant.

"I wouldn't be surprised to see service providers offering" such process-control applications as a service, says Stan Schatt, an analyst at Giga Information Group Inc. in Cambridge, Mass. "A black box at a site could periodically poll devices via Bluetooth [a wireless connectivity technology] and theo forward the data under secure conditions to a data center, where the reports are generated."

However, use of such services over telecommunications networks adds new requiremeots, says Pedro Fernandez, senior vice president of corporate strategy and marketing at Concero Inc. in Austin, Texas.

New Requirements

When Concero helped build a similar implementation, using Reston, Va.-based Nextel Communications Inc.'s wireless network, the company found that "Nextel has its requirements that you have to meet," Fernandez says. "You can't be generating a million hits an hour. You have to architect a wireless application differently, and that application has to be Nextel-certified."

One benefit of the service is that it avoids adding management chores and

released last year, McKenzie says.

In 1995, the Baltimore-based university was facing "a forklift upgrade of all its wiring at a cost of about $2.5 million," says J. P. Garvin, the SPH's assistant IS director.

"Professors wanted to bring computing into the classrooms, which weren't then wired," he says.

"The school's dean also wanted to encourage students to get laptops," says McKenzie. "He feels they're important analytical and collaborative tools for public health officials.

"About 30% of our students are from foreign countries," McKenzie continues. "When they leave here, they go home to become the ministers of health for their region or country. They need the laptops for data-analysis tools and statistical-analysis tools."

The Costs of Wires

But upgrading the school's Ethernet LAN was going to be expensive, he says. Wiring the university's 80-year-old buildings would have required putting in a false floor at a cost of $10,000 per classroom. Including wiring costs, a conventional LAN would have cost $18,000 per classroom, McKenzie says. Wiring areas such as the cafeteria, with its huge expanse of windows, would have been impossible, Garvin adds.

The idea for the school's first wireless LAN was serendipitous, McKenzie says. On a visit to Texas Instruments Inc. in Dallas to evaluate laptops, he noticed lights on TI's staff laptops. "It was wireless LAN cards," he says.

By spring of 1997, the SPH had a pilot with 40 of its students. Information technology staff installed wireless LAN cards in the laptops and at access points in strategic sites at the SPH.

LAN Cost Comparison

Estimates from Johns Hopkins University School of Public Health:

CONVENTIONAL LAN	
Fiber connectivity	$3,000
Hubs	$2,000
Raised floor	$10,000
In-room wiring	$3,000
Total cost per classroom	$18,000
Total cost for 40 classrooms	$720,000
WIRELESS LAN	
Data connection and power	$1,500
Two access points	$750 per unit
Total cost per classroom	$3,000
Total cost for: • 40 classrooms • two cafeterias • two libraries • three lounges • six conference rooms • two auditoriums	$210,000

After a month, the pilot was being hailed as a success, hut as a test, 20 students stressed the system by simultaneously downloading a 10MB file from an external Web site. All were able to download the file within five minutes.

A wireless LAN requires two access points per classroom, each of which includes a radio transceiver, 10Base-T port and encryption software. The access points connect to a hub on the Ethernet LAN.

The cost would be $3,000 per classroom — $15,000 less than for a conventional LAN, McKenzie says.

"When cabling is already deployed, DSSS [wireless] still costs about three times more," says Stan Schatt, an analyst at Giga Information Group Inc. in Dallas. But for such "green-field type implementations, the [Wireless LAN Association in Willoughby, Ohio] claims the payback is less than a year."

Where historic building status or asbestos in walls precludes drilling to wire for a conventional LAN, wireless is virtually mandatory, says Patrick Dryden, an analyst at Illuminata Inc. in Nashua, N.H.

Plus, Dryden adds, "the freedom to move desktops easily is a dream for users, business groups, building managers and IT managers."

The SPH concurred, says Garvin, "So we developed a three-year implementation plan."

"But our dean was so enamored of the idea, he told us to do it in six months," McKenzie says. "It was a little scary — there was no standard yet."

Over the next six months, the SPH installed nearly 100 access points throughout the campus and upgraded to IEEE 802.11 when the hardware became available in 1998.

The 802.11 standard includes Frequency Hopping Spread Spectrum (FHSS) signaling. Data travels on blocks that hop from one frequency to another every tenth of a second in a pseudorandom pattern known only to the sender and receiver.

DSSS signaling uses a broadband carrier and generates a bit pattern, or chip, for each bit of data. Each bit of data is identified, so the receiver can easily pick the data out of background noise.

Throughput speed for the new LAN will be greater. The FHSS data rate is 2M bit/sec., while DSSS signals transmit at a theoretical 11M bit/sec., although distance and physical blockages affect the rate.

Wireless has delivered on its promise at the SPH, Garvin says.

Chip Richter, a student in the SPH's distance learning program, agrees. "I see people using it all over campus to collaborate on projects and do research or use some of the analysis software" that the SPH loads on student laptops. "It's not just for e-mail and Internet access and taking notes," he adds.

communications traffic to existing networks, Harris says.

Such savings may be minimal, says Patrick Dryden, an analyst at consultancy Illuminata Inc. in Nashua, N.H.

Dryden says the anticipated burden is a common misconception. IT managers "think of vending machines, truck fleets and washing machines as PCs," he says. "The idea of taking on the support burden for a few hundred thousand additional PCs is frightening. Yet embedded systems aren't anywhere near as cantankerous as PCs: they lack the flexibility and the users, so [there are] no surprises."

Harris says that what is unquestionable is the business value of such data, both in daily operations and in the potential for data mining. Dr Pepper will use the data in "several ongoing research projects," he adds.

"Information like this is a great asset to have to consider new placements of vending machines, or locations where multivendor machines might be warranted, such as in front of a Wal-Mart or high-traffic supermarket," Harris says.

A machine operator can use the data "to plan loading of trucks and truck routes. Ideally, he'd like to spend his time filling an 80% empty machine rather than one that's maybe only 30% depleted," he says.

Savings from such systems "will far outweigh their costs," says Callie Nelsen, an analyst at International Data Corp. in Framingham, Mass. Even a small savings can be significant, she adds. For the vending channel, profit margins of 14% to 15% are common. Dr Pepper brings in 19%, Harris says.

Consumers will interact more with the vending machines, Nelsen says. "You can already buy a [soft drink] from a vending machine in Finland with your cell phone," she says. "It'll take a while here — the country is more spread out, and we're behind Europe in use of cell phones."



DR PEPPER/SEVEN UP INC.'s Rick Harris says VendCast software helps the company get real-time data on what's going through the company's vending machines.

...And Tomorrow



Commanding the Wireless Helm

Trailblazers and analysts offer tips for starting and guiding wireless technology projects.

By Matt Hamblen

WIRELESS COMPUTING may be in its early days, but it's bearing down on enterprises like a tidal wave, say information technology managers and analysts. Smart phones, wireless laptops and wireless handhelds are pouring into Fortune 1,000 companies, whether IT shops are prepared or not.

Managing this change can be tricky, experts say. "We are still in the Model T Ford days of wireless," says analyst Gerry Purdy at Mobile Insights Inc. in Mountain View, Calif.

But there are enough large wireless applications deployed in the U.S. — such as wireless stock trading for consumers — to provide neophytes with some project management do's and don'ts.

Best practices for managing wireless, say pioneers, include assessing business needs before developing applications, launching small trials to work out the kinks and placing a magnified focus on security, safety and standards.

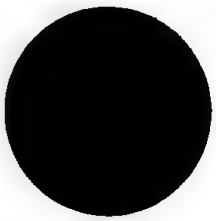
Wireless computing shows signs of taking off. Indeed, the number of users of all types of wireless devices in the U.S. is expected to climb from fewer than 10 million this year to 36 million

Using and Managing Wireless Technology

Computerworld asked 120 IT professionals about the use of wireless technologies in their organizations.

QUESTION 1: DOES YOUR IT DEPARTMENT SUPPORT WIRELESS TECHNOLOGY NOW?

Yes (50)	42%
No (70)	58%



QUESTION 2: DOES YOUR ORGANIZATION PLAN TO USE AND SUPPORT WIRELESS TECHNOLOGY IN THE FUTURE?

(Asked of the 70 who answered "no" to question 1)

Yes (46)	66%
No (22)	31%
Don't know (2)	3%



QUESTION 3: WHAT ARE YOUR TOP CHALLENGES IN SUPPORTING AND/OR MANAGING WIRELESS TECHNOLOGY? (Top five responses; each respondent listed three challenges)

1 Security	52%
2 Reliability of wireless technologies	50%
3 Integrating with "wired" infrastructure	34%
4 User training	30%
5 Providing front-line or real-time help desk support	29%

SOURCE: COMPUTERWORLD RESEARCH TELEPHONE INTERVIEWS OF 120 IT PROFESSIONALS, JUNE 5-9

Making Savvy B2C Connections

The hottest market for wireless applications is the business-to-consumer space, as evidenced by retailer **Best Buy** in Minneapolis and **The Sabre Group Holdings Inc.**, a business travel services company in Fort Worth, Texas.

"For us, wireless is mission-critical," says **Peter Steven**. Sabre's vice president of business and product. Hundreds of business travelers are using smart phones to make instant wireless changes to hotel, airline and car reservations through Sabre, he says. The low costs of enabling wireless transactions are expected to provide Sabre with a quick return on investment, he says. For example, using a voice connection to make a reservation change through a call center is estimated to cost nearly $50; doing so over a wired Web connection costs just $10, while using a smart phone is expected to run Sabre about $5 per transaction, he says.

Some of the headaches Sabre has endured in setting up the wireless system include dealing with various carriers in the U.S. that don't support a standard interface – and probably never will, given competition, says Steven. Sabre has worked with IBM and Finland-based Nokia Corp. to modify the Wireless Application Protocol interface to work with the several U.S. cellular standards.

Best Buy's BestBuy.com division in January started an aggressive plan to roll out wireless online shopping after research revealed that customers were "very interested in using wireless devices," says **Mark Ebel**, Best Buy's director of digital communications. Ebel says he expects DVDs and software to be among the hottest-selling products after the wireless service launches this month.

Best Buy's wireless initiative is part of a $1 billion e-commerce commitment that included a relaunch of the company's Web site in June.

Smart phones were the logical platform choice for Sabre, since nearly every business traveler has one, Steven says.

Gartner Group analyst Bob Egan says he expects 1 billion wireless phones will be in use worldwide by the end of 2003, at which time about 80% of new phones will be Web-enabled. "Wireless technologies are the growth hormone of e-business," Egan says. – *Matt Hamblen*

in 2003, according to Gartner Group Inc. in Stamford, Conn.

A *Computerworld* telephone survey of 120 IT managers found that 42% of IT departments currently support wireless devices, while another 38% said they expect to support such technologies in the future (see chart).

Doubters and Adopters

While some IT managers are taking a wait-and-see approach to rolling out wireless applications, others are moving ahead briskly. "I have to confront the proliferation of cell phones that will be smart phones, but every time we have considered a wireless program, we decided the technology isn't ready yet" in the U.S., says Peter W. Burrows, chief technology officer at Reebok International Ltd. in Canton, Mass.

But because Reebok is a worldwide company, Burrows must juggle the needs of early smart-phone adopters in Europe and Japan while trying to judge which network standards will dominate in the U.S., where wireless adoption has been slower.

The predominant wireless network standards in the U.S. are split between Code Division Multiple Access, Time Division Multiple Access and Global System for Mobile Communications, which is the standard that Europeans rely on. The pathway for which standards will dominate in the U.S. in coming years is still unclear.

"If I install a wireless platform, who can make a prediction so we get five years' life from the investment? I [doubt] any vendor will retrofit the gear [for free] if it gets outdated," Burrows says.

Nevertheless, the potential that wireless applications hold in generating new sales or customer accounts in industries such as financial services is leading some companies to plow ahead.

At Fidelity Investments in Boston, the demand for wireless investing was so hot that the company launched a proprietary application in October 1998 that now boasts nearly 70,000 accounts and is adding thousands of accounts each month, says Joseph G. Ferra, senior vice president of Fidelity Online Brokerage.

At Best Buy Co. in Minneapolis, consumers in the near future will be able to buy retail products such as CDs and software over Wireless Application Protocol phones and wireless handhelds from Palm Inc., says Mark Ebel, the company's director of digital communications.

"We think wireless is going to be big and we want to be a part of it," Ebel says (see "Making Savvy B2C Connections," above).

Outsource or In-house?

One of the first concerns IT managers face is whether to hire third-party developers or try to build wireless applications with existing staff.

Fidelity saw little choice but to move on its own, given the paucity of hardware, software and integrators available in 1998, Ferra says.

However, analysts say there is so much interest in wireless applications that traditional network service providers have begun providing integration services. Best Buy, for example, wanted to accelerate its consumer wireless rollout and decided to do so through a long-term relationship with GWcom Inc. in Santa Clara, Calif., Ebel says. Though not well known in the U.S., GWcom has set up wireless trading for 20 Chinese brokerage houses in the past two years.

Analysts say many IT managers neglect taking the seemingly obvious steps of assessing business needs and understanding the limitations of wireless technology before launching a project. For example, one analyst points to a U.S. manufacturing customer who bought wireless LAN hubs but didn't buy enough of them to support his company's office space.

While wireless projects are hot in the business-to-consumer space today, corporate IT departments are "not even close to being prepared" for building business-to-business and business-to-employee wireless systems, says Mark Zohar, an analyst at Forrester Research Inc. in Cambridge, Mass. That's because many IT professionals are skeptical about the security of wireless connections for vital functions, as well as lack of bandwidth and reliability.

But for many organizations, a sales team might need only a daily update on product pricing or inventory levels. That kind of information wouldn't require a constant wireless connection for a pager or smart phone, but could be handled instead by handhelds with local storage capabilities that are connected for just a few minutes a day, Zohar adds.

Analyst Alan Reiter at Wireless Internet and Mobile Computing in Chevy Chase, Md., says standardizing on one device "might not be appropriate" for all companies, which implies that the IT shop could end up managing more than one wireless network.

In fact, Gartner Group predicts that

The Wireless Helm, page 48

Commanding the Wireless Helm

Continued from page 47

one-third of knowledge workers will rely on three or more devices (i.e., a laptop, a mobile phone and a personal digital assistant) through at least 2003. The range of devices needed will drive technical support costs 70% higher than for those workers who carry just two devices.

Trial Blazers

Wireless pioneers and analysts say trial runs are more critical to the success of wireless rollouts than the applications themselves.

"The trial has to be a statistically meaningful sample, say 10 to 15 users, but not so many you can't manage it," says Craig Mathias, an analyst at Farpoint Group in Ashland, Mass.

"Run a trial with reasonable expectations," Purdy advises. In addition, managers should build in technological wiggle room for application changes that allow for tremendous wireless bandwidth growth, going from today's 9.2K bit/sec. up to 384K bit/sec. within five years (and much sooner in Japan and Europe).

Metro-Goldwyn-Mayer Stodios Inc. in Santa Monica, Calif., is running a pilot with 15 salespeople who have been using smart phones from Sprint Corp. for three mooths as a "complete device replacement for their laptops," says Ken Spenchian, CIO at the movie studio.

The pilot could expand to 60 salespeople nationwide, allowing them to use smart phones to check inventory of recently-released videotapes for their retail store customers.

One adjustment MGM's end users have had to make is getting used to a 1.5-by-1.5-in. screen for reading e-mail, "which is not as bad to read as you'd expect," Spenchian says. "At first, we thought the phone would be way too user-nasty" because of screen size and the need to use a small keypad to input data, he says. But user reactioo to the devices has been better than expected. Still, MGM is also looking at Palm 7 wireless handhelds with bigger screens because "usability is the biggest concern."

The overriding reason to consider using smart phones, Spenchian says, is that the "phone is the most pervasive device out there." Palm Inc. has about 7 million devices installed worldwide, but there are nearly 100 million wireless phone users in the U.S. alone, analysts say. On top of that, smart phones could integrate many devices in coming years and they're already able to take advantage of voice recognition technology.

Stowaways

Security has also become a key issue with wireless rollouts since most of the devices are small and can be easily lost or stolen. And because they are easy to hide, wireless devices pose a greater threat of grabbing vital data over far-reaching networks than, say, laptop machines.

"The best approach to wireless computing security is to be as paranoid as you can be," says Mathias. "Look for every single hole and ask your staff and vendors how it is being addressed, whether it is the threat of somebody grabbing a signal out of the air or overhearing your voice conversatioo in an airport."

> If I install a wireless platform, who can make a prediction so we get five years' life from the investment? I [doubt] any vendor will retrofit the gear [for free] if it gets outdated.
>
> PETER W. BURROWS, CTO, REEROK INTERNATIONAL LTD.

Because encryption software for wireless applications is immature, Reiter warns users to carefully evaluate product claims. One of the worst security oversights a manager can make, Reiter says, is to assume a wireless network carrier has provided more security than it really has.

For example, some encryption over wireless networks protects only portions of the total pathway. "Encryptioo should be end-to-end," Reiter says.

Spenchian says tbe simplest and best technique for securing smart phones is to turn them off. That way, even if a lost phone falls into an outsider's hands, it can't be used without a password, he poiots out.

At Pacific Coast Building Products, a building materials maker in Sacramento, Calif., workers are using 50 AT&T Corp. smart phones to access e-mail and browse the Internet. The service is supported by a server from Wireless Knowledge LLC in San Diego.

"We would not have gone forward at the start of the project if there weren't guarantees of encryption and password protection," says David Matteoli, a Windows NT administrator at Pacific Coast.

One of the security benefits to using smart phones is that they can be set up as dumb terminals on a network and not store data that might otherwise be accessible, Matteoli says.

Setting Standards

A necessary ingredient for any wireless deployment, say experts, is setting formal policies for use.

These include establishing the same rules for wireless devices as those for laptops or PCs, such as making users realize that corporate data is the property of the company. Gartner analysts recommend that companies provide employees with devices, rather than allow them to use machines they purchase on their own to avoid any conflicts over who owns the data.

Setting personal safety standards for wireless users might also be a good idea, say experts, who advise IT managers to find ways to nudge users to avoid typing messages on a smart phone, pager or handheld while driving or eveo while walking through a busy warehouse.

Matteoli says a Pacific Coast executive recently got into a car accident while using a smart phone. Fortunately, he was unhurt.

Handing Telecom to IT

Gartner analysts and other experts say IT shops need to cootrol telecommunicatinns policies and operations with the advent of smart phones.

"It would have been much easier setting up our smart-phone service if IT and telecom were one and the same department," Matteoli says. Because the AT&T service includes a $20-per-month data charge separate from the voice service charges, Matteoli had to evaluate how the wireless project at Pacific Coast would be paid for.

"It got very complex very quickly," he says.

Having an IT group control cell phones for voice and data helps provide "economies of scale for purchasing and usage," says Tom O'Connor, director of knowledge management systems at BG Group PLC, a natural gas distributor in Redding, England.

Managing wireless innovations "is oot a quick process," O'Connor adds. "It is a really fundamental change in the way businesses work."



JOHN MOSTERN

"EVERY TIME we have considered a wireless program, we decided the technology isn't ready yet" in the U.S., says Reebok CTO Peter W. Burrows

High Wireless Act



Adopting wireless technology puts new challenges on IT staffers, who must measure success by confronting and conquering a physical environment. By Christine Willard

TRYING TO CONVERT Carnegie Mellon University's campus in Pittsburgh to wireless technology had information technology staffers climbing around buildings, measuring each room for radio coverage and checking what walls were made of and where the furniture sat.

Mysterious interference in one building was finally traced to a commercial paging tower a few blocks away, operated by a local business.

"Radio signals can bleed through floors inside buildings," says Lisa M. Picone, one of the two data communications technicians who led the installation. "There's a learning curve to understanding what the buildings are made of and how it affects radio coverage. We had to come up with our own design criteria."

Picone and colleague Mark Campasano teleconferenced with Lucent Technologies Inc. in Murray Hill, N.J., for training. Lucent also provided antennae and other equipment and exchanged software with the university, making it a showcase for its wireless technology.

Lucent's experts made some site visits to help technicians get the project into the ether. They added a wireless router, an Ethernet with switches, and fiber-optic cable to the buildings, among other infrastructure.

Upgrading infrastructure is the main challenge in going wireless, as KeyCorp found. "Like most banks, we've got a huge legacy involvement," says Bob Rickert, executive vice president and chief technology officer at the Cleveland-based company.

In 1995, KeyCorp started using remote computing for relationship managers who deal with corporate customers, allowing them to work remotely on laptops. They make their sales calls, then dial in to update their sales forecasts and download call reports.

Using Lotus Notes as the platform allowed the IT department to operate in a local mode and required training and discipline in testing those systems. But IT people want those new skills.

IT professionals have to be fluent in the technology and creative in applying it to create solutions to the problems that arise when they unplug and go into the ether. Advice and answers are out there, though, and vendors are eager to help show the advantages.

"If you are pushing down that Internet path, you will get the skills you need," Rickert says. But, he cautions, "you can get into the catch-22 of waiting until you have a live project that needs the skill. Then it's too late to train and you have to hire contractors. You never have the chance to build the skill among your employees." KeyCorp has about 1,500 IT employees.

A wireless LAN pilot from Cisco Systems Inc. in San Jose is one of the possibilities KeyCorp is working on, but the bank isn't ready to take that change to external customers yet.

"Most customers aren't really comfortable beaming their bank statements around and trading over the air wirelessly yet," Rickert says. Web page form and content have to he modified for small handheld devices. "We want to he ready, and we want to get it right," he says.

Carnegie Mellon spent 18 months installing the Lucent Orinoco 802.11 wireless network to cover more than 90% of the 100-acre campus, indoors and out, totaling more than 2.8 million square feet in more than 30 buildings.

Vice Provost and CIO Tracy Futhey found that the team of technicians and engineers installing the wireless LAN faced new challenges in initial network design, network management, monitoring and troubleshooting. The demands on user support were essentially the same as with a wired network.

Weekly design review meetings with other network professionals helped in working through design challenges. "It's scientific, but there's also an art to it," says Campasano. "You have to get the feel of what the building's like."

Each building, floor and office had to he carefully measured for radio coverage because each had unique characteristics. The cable-plant manager worked with the installation team to design cable routes. Physical-plant managers worked on power supplies, which were then contracted out. The other department managers suggested alternative layouts to improve coverage or efficiency of access point locations.

New Networks Require Innovation

Technicians had to he innovative in managing and monitoring the network. "The tools and utilities to manage wireless networks are not as mature as those for wired networks," Futhey says.

"Wireless LAN management tools are still lagging behind in supporting large-scale enterprise-size deployments," says Chuck Bartel, director of operations and project director of Carnegie Mellon's wireless network, known as Wireless Andrew. "Most tools assist in the management of small-scale deployments of 10 to 20 access points, but large-scale, campus-wide deployments require tools that allow for the easy reconfiguration of multiple [access points] from a central management station."

Having helped the campus go wireless, Picone recommends dedicating enough employees to work exclusively on a wireless project. She and Campasano continued their daily responsibilities maintaining the existing network for the campus while they worked on Wireless Andrew.

"It is important to develop staff who are your primary experts," says Bartel. "But the entire network staff needs to learn to install and support the new [wireless] LANs to minimize burnout of the key staff members and allow the entire staff the opportunity to develop skills in this exciting new area of networking."

But the achievement was worth it. "Everyone can he in touch with a meeting or a class from anywhere on campus," Picone says. "We always have a wireless connection with our laptops."

"Our IT staff have been very gratified by the overwhelmingly positive response to the network from our user community," says Futhey. "Wired networks have been around long enough that they've become a utility that no one really takes time to praise anymore. But the wireless network has thrilled people with the new technology. They give our staff a lot of positive feedback, and that's provided additional motivation and recognition."

Willard is a freelance writer in Los Osos, Calif.

The new guy just got a $40,000 signing bonus.

Have you counted the openings in your IT department lately? You're in the middle of the hottest IT job market ever. Make it work for you. Just sign up for free Job Alerts from ITcareers.com. You'll find tens of thousands of serious IT opportunities to create the "next big thing" at some of the world's best companies. When one of them matches your profile, we'll alert you right away. Plus, we offer tips and tools to help make you even more valuable at your next job. Or your current one. ITcareers.com is a service of the ITworld.com network, the industry's most trusted resource for all the latest IT news, products, and more. To start your search, visit www.ITcareers.com.



TECHNOLOGY

REALLY BIG WEBCAST

IT managers will get a look at large-scale webcasting next month when the Democratic Party offers gavel-to-gavel Web coverage of its convention. ▸ 52

MODULAR SGI SYSTEMS

SGI's latest systems deliver both high performance and flexibility through their new modular architecture. But by focusing on high-end workstations, the company may be losing the bulk of the market. ▸ 52

APP CARE AND FEEDING

The care of corporate applications would be a lot easier with integrated tools to monitor application performance. Compuware's acquisition of Optimal Networks could help make that happen. ▸ 54

COMMERCIAL SUPERCOMPUTER

Got a really big application to run? Then you'll like the commercial version of IBM's ASCI White supercomputer. It features as many as 8,000 processors and a superfast internal switch. ▸ 55

QUICKSTUDY

How well does your network perform when it counts? Quality of service technologies can help organize network resources to ensure that important transactions get priority. ▸ 56

FUTURE WATCH

Trying to find a needle in the information haystack? Try drawing a map to help you visualize the information you need. ▸ 57

AIN'T NO EMULATOR

Running Windows applications without Windows is no paradox, but an intriguing open-source project called Wine. But, its backers point out, don't confuse this with some kludgy emulator. ▸ 58

EMERGING COMPANIES

NaviSite is a managed-service provider that offers more than the locked-cabinet service of an equipment co-location provider. NaviSite not only rents Web applications but also supports technologies and processes such as database systems fail-over and e-commerce management. ▸ 60

SECURITY JOURNAL RETURNS

The Security Manager's Journal is back online in our Security Watch community at *www.computerworld.com*. Our previous security manager, "Pat Rabbinski," has been called away by other responsibilities, but look online for guest columnists.



WIRELESS, TODAY AND TOMORROW

WIRELESS TECHNOLOGY is moving beyond cell phones and PDAs into use in corporate LANs and even vending machines. Johns Hopkins University, for example, is already on its second full-scale wireless LAN upgrade, and Dr Pepper/Seven Up is piloting the use of vending machines that wirelessly transmit sales data to headquarters.

44

BRIEFS

Home Network Sales Climb in First Quarter

A study by Cahners In-Stat Group in Scottsdale, Ariz., shows that sales for home networking equipment were up by $50 million for the first quarter.

The boost came from higher-priced wireless network equipment, said In-Stat analyst Mike Wolf. Wolf said he expects the use of electrical wiring for carrying network traffic within homes to create further competition as standards are worked out.

New Macromedia Interface Debuts

San Francisco-based Macromedia Inc. last week unveiled a standard user interface that will be consistent across all of the company's Web authoring products. Macromedia Flash 5, due to ship in September for $300 ($500 as part of the Flash 5 Freehand 9 Studio), is the first product to feature the new interface.

BroadVision Wins ETrade Bid

BroadVision Inc. in Redwood City, Calif., announced last week that Menlo Park, Calif.-based ETrade Group Inc. selected its One-To-One Enterprise software to provide enhanced personalization capabilities for its Web site.

Alliance Boosts Wireless Security

Certicom Inc. in Hayward, Calif., and Research in Motion Ltd. (RIM) in Waterloo, Ontario, have announced an alliance to enable RIM wireless devices to use Certicom's elliptic curve cryptography (ECC) for greater security in wireless transactions and communications.

Analysts consider ECC technology to be a more efficient alternative to conventional public-key cryptographic algorithms, providing faster processing speed, reduced bandwidth usage and decreased battery requirements. RIM said the security mechanism will be offered in all its products.

Convention Webcast to Use Streaming Media

Democratic convention organizers brace for heavy traffic on DNCC's server

BY JAMES COPE

IN SIX WEEKS, IT managers will get a live demonstration of large-scale — *really* large-scale — webcasting when the Democratic Convention goes live over the Internet.

The Democratic National Convention Committee (DNCC) hopes to webcast interactive, gavel-to-gavel coverage of the party convention, to be held Aug. 14-18 in Los Angeles.

One major question is how well the audio and video feeds will sound and appear on viewers' PCs as the number of people logged on increases.

During a 30-minute virtual press conference demonstrating the system two weeks ago, reporters typed questions into the instant messaging box on their screens while microphones and video cameras captured responses from DNCC Chairman Terry McAuliffe and the organization's CEO, Lydia Camarillo, and streamed them to the Internet using webcasting technology from Akamai Technologies Inc. in Cambridge, Mass.

Computerworld observers who tuned in over an Integrated Services Digital Network 128K byte/sec. connection said they found the audio to be crisp and clear. Moreover, full-motion video of the two DNCC officials was said to be quite smooth as they responded to questions sent via instant messaging.

On one occasion, the e-mail application on a *Computerworld* user's PC borrowed bandwidth to check in with the corporate server, causing a momentary slowdown in the webcast video. But audio continued normally, while video remained in sync and returned to its original performance once the PC had finished fetching e-mail.

Peter Ragone, director of media relations for the DNCC, said he was pleased with the results of the preview but conceded that the 200 users logged on for the press conference were a drop in the bucket compared with the thousands who would likely click to the convention. No one really knows how many people will log on, said Ragone, who wouldn't offer a prediction.



A VIRTUAL PRESS conference with DNCC Chairman Terry McAuliffe (left) and CEO Lydia Camarillo went smoothly for 200 users

Sanjay Srivastava, Akamai's vice president of enterprise services, said the system could stream video and audio to more than 20,000 concurrent users and scale to several hundreds of thousands. But neither Akamai nor the DNCC would say if the DNCC's implementation of that technology would handle such levels.

Alex Benik, an analyst at The Yankee Group in Boston, said it's a little early to come up with firm figures on how many users can be supported on a webcast while sustaining adequate performance.

Benik noted that streaming media webcast technology is still in its infancy. "[The webcast of the convention] would not have been feasible 18 months ago," he said.

In a separate announcement last week, Akamai officials said the webcast of Steve Jobs' keynote at the Macworld Expo in New York July 19 garnered an audience of 21,000 concurrent users. A total of 95,000 separate users logged on during the webcast, Akamai officials said.

"Akamai seems to be saying that [the Jobs webcast] is the biggest it's done," Benik said.

Even Srivastava acknowledged that the Internet isn't a friendly place for transmitting audio and video because the needed data packets may not arrive at the right place at the right time.

To help mitigate this problem, the Akamai technology used for the convention will dynamically map the Internet to help users' browsers find the best path to the server most likely to deliver a quick response.

Additionally, according to Srivastava, three or four duplicate content streams will be broadcast to Web servers to increase the odds that the servers that are pegged to handle streaming audio and video have all the packets that make up that content.

Akamai's technology adjusts the content stream according to individuals' connections, sending video and audio that are encoded to best work with that connection, said Sujata Ramnarayan, an analyst at Gartner Group Inc. in San Jose.

Republican officials are also promising webcasts of their conventinn this week in Philadelphia but declined to provide details.

Brick by Brick, SGI Builds High-Performance Servers

BY MARK HALL

Silicon Graphics Inc. has jumped over the latest competitive hurdle in the high-performance computing race with the debut of its new Origin 3000 and Onyx 3000 servers.

The Mountain View, Calif., vendor's latest entries intn high-end computing use Mips Technologies Inc. processors, SGI's Irix operating system and a new, modular architecture called NUMAflex. The systems consist of "bricks," which are 19-in. Electronic Industries Association rack-mounted devices that serve general functions such as CPU and system memory and specific functions such as graphics, I/O and routing.

Each NUMAflex system accepts up to 512 processors that can use a single system image. With the system's shared memory, programmers can write applications that use idle RAM associated with any available processor in the server. Irix determines which memory can be lent to another application and for how long.

Brad Comes, director of the U.S. Army Engineer Research Development Center's Major Shared Resource Center in Vicksburg, Miss., said his organization purchased one of the machines as part of the Department of Defense's high-performance computer modernization program. More than 500 scientists and engineers will share the system, fully configured with 512 processors and more than a half-terabyte of memory. SGI's new offerings are "a particularly exciting development because of the fully shared memory capabilities," Comes said. SGI's use of bricks "makes it possible to do system maintenance without having to take the system down."

For SGI, the Origin 3000 may win the battle but not the war. SGI's Unix server market share has fallen, said Dan Kuznetsky, an analyst at International Data Corp. in Framingham, Mass. "SGI focuses on the graphics and high-end computing markets that, while interesting, tend not to be as lucrative as general-purpose computing markets," he said.

I See The Light

Eyestrain hurts, but there are good remedies available. By Russell Kay

A FEW YEARS AGO, it seemed as though there was an epidemic of repetitive stress injuries (RSI) among computer users, primarily in the form of wrists pained by carpal tunnel syndrome. For a while, it seemed as if half the people I worked with were wearing wrist supports at least part of the time. While this is less an information technology issue than one of employee health and furniture design, it's clearly related to computer use, and IT managers have had to deal with and help troubleshoot RSI-related problems.

As a writer, my primary tools used to be paper, a pencil, a typewriter and a telephone. Now I sit in front of a computer screen for most of every day, and I've become acutely aware of another, more insidious form of RSI: eyestrain.

Through Glasses, Dimly

As my body has slumped into middle age, I've become more conscious than ever of how much I rely on my eyes and how they're just not as good as they used to be. I'm quite nearsighted and have worn glasses with a heavy prescription since I was seven years old. Still, until about 10 years ago, my vision always corrected to better than 20/20. I also encountered the common age-related inability to focus as closely as I used to, and so about a dozen years ago, I started wearing bifocals for reading. That was fine for a while, until I realized that neither the distant-vision nor the reading segments of my glasses would let me see my computer screen in sharp focus. I tried progressive-focus lenses but couldn't adapt to them. I spent two years straining my eyes and moving to ever bigger monitors. Then I took a friend's advice and got a special pair of glasses just for computer work.

Computer glasses? Yes. The main part of the lens is optimized for sharp focus at roughly arm's length, and there's a standard bifocal reading lens at the bottom. The main lens takes in both the built-in screen of the laptop I use on the road and the desktop monitors in my home and in *Computerworld*'s office. Distant vision has been dispensed with.

And what a difference it makes. When I put on my computer glasses, my head relaxes and my eyes smile. It's as real and physically refreshing a feeling as putting a cold cloth on my forehead. No more eyestrain. The only drawback is that I have to remember to carry my second pair of glasses, so when I get into the car in the evening and realize that I can't see well enough to drive, I don't have to trek back into the office to find them.

Seriously — that pair of computer glasses is the best present I've ever given myself. It's made me more comfortable, more productive and better able to focus on my work.

Let There Be Light

Another important element in working efficiently at a computer screen is ambient lighting. The main *Computerworld* editorial office contains a farm of low-walled cubicles with a ceiling full of fluorescent lamps. There's nothing special about this, but on-screen reflections can be a problem.

At home, where I have more flexibility, I've discovered some very helpful lighting products that let me work with less strain. First is a small desk lamp from 3M Co. in Minneapolis, the model TL700EG, which puts a small fluorescent bulb under a clear polarized filter. The light is soft and almost completely glare-free, and it's very pleasant on my desk in the evening.

Even better than that lamp is a line of lighting products from Ott-Lite Inc. in Tampa, Fla. Ott-Lite's lamps and fluorescent bulbs are characterized by very natural color, radiation shielding and reduced glare. Ott-Lite got its start with biomedical lighting, when John Ott invented the full-spectrum fluorescent bulb for stimulating plant growth indoors. The company also began making treatment units for people suffering from seasonal affective disorder. Ott-Lite's small TrueColor lamp (priced at less than $80) is widely used by people who sew and by fabric artists; you can see them on the appraisal tables of *Antiques Roadshow* on PBS.



ARE YOUR SPECS up to spec for computer work? Typical glasses may not do the job



OTT-LITE LAMPS:
1 Crane
2 VS Floor Lamp
3 Blueberry Task

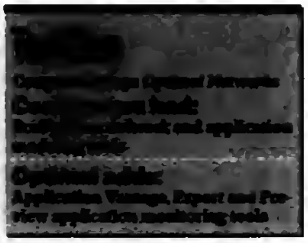
I'm currently using a floor model Ott-Lite lamp (about $135) with an attached magnifier that often comes in handy. At first, the lamp's light seems harsh, but after a few seconds, it becomes very soothing and natural, more accurate and relaxing than the light cast by incandescents and standard fluorescent bulbs.

I'm in the process of getting Ott-Lite bulbs for my workshop and home office fixtures. They're more expensive than bulbs at my local home center, but you know what? My eyes, my working comfort and my color discrimination ability are worth it.

Optimal Networks Sale Sharpens Compuware's Tools

BY SAMI LAIS

The sale of Optimal Networks Corp. to Compuware Corp. should be a winning proposition for information technology departments that want to use the same tools to predict and monitor an application's performance from inception through production, analysts said.



Although the two companies have been occasional competitors, the overlap in functionality of their tools "is more apparent than real," said Dennis Drogseth, an analyst at Enterprise Management Associates in Boulder, Colo.

Terms of the sale, which was announced last week, weren't disclosed.

The tools from Optimal in Mountain View, Calif., add application-performance monitoring to Farmington Hills, Mich.-based Compuware's EcoSystem network modeling tools suite. Compuware's $40 million purchase last November of Arlington, Va.-based CACI International Inc.'s Comnet added network capacity planning capabilities to Compuware's tools.

Let the Expert Decide

"IT application caretakers will really benefit if Compuware can do more to correlate EcoScope, EcoPredictor [the CACI network planner] and Optimal's Application Expert and turn their QA-Load test tool into an active endpoint agent simulating user activity for these tools," said Patrick Dryden, an analyst at Illuminata Inc. in Nashua, N.H.

Compuware will use the integrated suite of tools in its eDynamic Service and test the concept of becoming a management service provider that manages and monitors networks for customers, said Elisabeth Rainge, an analyst at International Data Corp. (IDC) in Framingham, Mass.

Optimal's best-known tool is its Application Expert, which captures entire sessions on an application, allowing managers to view the application's performance step by step. The integration of Application Expert into EcoSystem will aid communications by letting application developers and application and network managers use the same tools, said Paul Bugala, an IDC analyst.

As an IT manager, "I've used the Optimal tools at two different companies," said Jean-Pierre Garbani, now an analyst at Giga Information Group Inc. in Cambridge, Mass. "I'd talk with the application people and ask them what infrastructure they required to support the application. Most of the time, they didn't know."

Garbani said Application Expert will let him determine those requirements before putting an application into use.

Optimal last year formed a strategic partnership with Aprisma Management Technologies in Durham, N.H. Patrick Kelly, Aprisma's product management director, described how Application Expert works: "Say [the application] works fine over the LAN but not when you run it on the WAN," he said. The software lets a manager play back the session and see what caused the delay. "No one else has takeo that approach," Kelly said.

Optimal's Application Expert; Application Vantage, an application performance troubleshooting tool; and Application Preview, a tool for gauging an application's bandwidth requirements, are available now and are priced at $20,000, $35,000 and $15,000, respectively.

Just a reminder the next time you're considering a Web procurement solution.

"The Microsoft platform leads two-to-one over its closest competitors, IBM and Oracle, in Web procurement solutions currently in use."

— Zona Research, Inc.
Q1 2000 eProcurement Study.

Microsoft
Where do you want to go today?
microsoft.com

BRIEFS

EMC's Data General Adds to Server Line

EMC Corp.'s Data General division has boosted its server line with new Windows NT, Windows 2000 and Data General/Unix systems. The new line includes the quad-processor AV3600 and AV3750 systems and an eight-processor AV8650 based on Intel Corp.'s Pentium III Xeon chips. The AV3600 comes with up to 8GB of memory, eight expansion slots and five internal disk drives.

The high-end AV8650 supports up to 16GB of error-checking memory and a maximum of 10 hot-pluggable Peripheral Component Interconnect expansion slots. The system's Avion Management Board allows remote service centers to monitor and troubleshoot the system, even when the server is nonoperational.

Pricing is not yet available.

EpicRealm Chooses Foundry's Web Switches

EpicRealm, an electronic-business Internet service provider in Richardson, Texas, has deployed Web switches from San Jose-based Foundry Networks, Inc. Officials said EpicRealm has installed ServerIron Layer 4 through 7 Web switches and FastIron Layer 2 through 3 Gigabit Ethernet switches.

BackWeb Announces Push Application Server

BackWeb Technologies Inc. in San Jose has announced its Push Application Server, due for release this quarter. The server will allow companies to use a single middleware product to deliver content to any device.

Push Application Server will eventually support handheld computers, cell phones,

IBM's Commercial Supercomputer Debuts at DOE

BY JAIKUMAR VIJAYAN

IBM has launched a commercial versioo of the ASCI White supercomputer it delivered to the U.S. Departmeot of Energy (DOE) last month.

The RS/6000 SP Unix servers, anoounced last week, feature performance-enhancing copper microprocessors, silicon switching technology and new management software that combine to deliver a multifold improvemeot over existing models, according to IBM.

Each node oo the SP model — the system supports up to 512 nodes — is a 16-processor server based oo IBM's 375-MHz Power3 copper-based chips.

Users can start with a four-processor system and scale to more than 8,000 processors.

Connecting the nodes is a superfast 500MB internal switch that delivers a threefold performance gain over the existing switch, IBM said.

Though few commercial users will oeed to scale to the thousands of processors available with the new technology, the fact that they can should be "very comfortable to those who merely want dozens of oodes and hundreds of processors," said Richard Partridge, an analyst at D. H. Brown Associates Inc. in Port Chester, N.Y. "IBM wants to show everyone they have the biggest and the meanest dog on the block."

New management software allows for dynamic CPU de-allocation, a feature that automatically isolates failed servers from the rest of the system. A Parallel System Support program makes it easier for centralized management of the SP cluster, while an enhanced version of IBM's LoadLeveler software improves failure detection and job scheduling tasks, said IBM.

All of these features are identical to those available on the DOE's supercomputer and should provide commercial users more than enough scalability to run their largest applications, said Michael Kerr, a vice president at IBM.

"For customers, what all of this means is the ability to build very large and robust systems," Kerr said.

Analysts for some time have said they believed that the arrival of systems such as IBM's latest SP servers and Hewlett-Packard Co.'s Superdome line of high-end servers, expected later this year, could seriously challenge Sun Microsystems Inc.'s domination of the enterprise Unix server market.

"Sun is doing a fabulous job installing a lot of systems at the high end," Partridge said. "But [systems such as the SP] should put a little more pressure on them to accelerate and force their follow-on to the [E10000]."

Earlier this month, Sun announced quarterly results that easily exceeded analysts' expectations. For its fourth quarter ended June 30, the company reported profit of $660 million on revenue of $5 billion, well above the $395 millioo in profit on revenue of $3.5 billion in the same period last year.

Propelling much of Sun's steady growth over the past few years have been sales of its high-end Unix servers, particularly its E10000 servers, which offer significant, though increasingly narrow, performance advantages, over rival systems.

AT A GLANCE

A Commercial Supercomputer

The commercial version of the ASCI White supercomputer. includes the following features:

- Up to 512 nodes, each of which is a 16-processor server based on 375-MHz Power3 copper-based chips.
- A 500MB internal switch that delivers threefold the performance of the existing switch.
- New management software that automatically isolates failed servers from the rest of the system.



pagers, fax machines and voice-mail systems.

The BackWeb software can identify whether the user has received a notification on the preferred device, such as a PC. If not, the server reroutes the information to the device of the next highest priority. Pricing is based on the number of server CPUs or the number of clients.

With its products supported by Lucent Technologies Inc., Hewlett-Packard Co. and several smaller companies, BackWeb is trying to garner support for a "Universal Push" initiative that aims to provide a single infrastructure that will let any application deliver content to any user on any device.

Linux Support for HP Graphics Cards

Hewlett-Packard Co. has announced Linux support for the recently introduced HP Visualize FX5 and FX10 graphics accelerators used in its Windows NT and Unix workstations.

Linux-based workstations featuring the accelerators are slated to become available in September with a starting price of approximately $4,700.

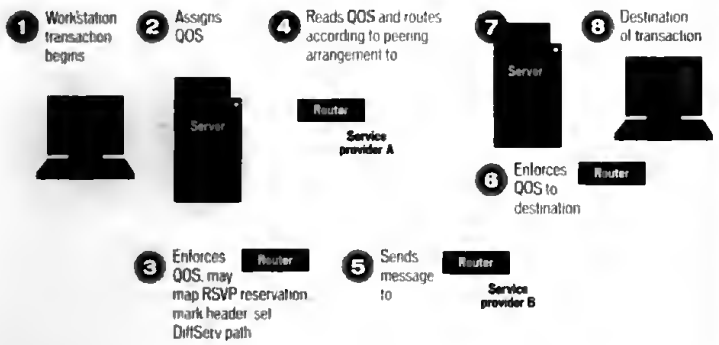
FileNet Launches XML-Based Service

Costa Mesa, Calif.-based FileNet Corp. has announced the release of Panagon eProcess Services 3.0. This XML-based service automates important processes for business-to-business, business-to-consumer and business-to-employee applications by controlling work processes conducted over the Web. Functions of eProcess Services include eProcess Auditor, which allows the management of business applications; Web Content Lifecycle Management, which allows users to control content creation for Web pages; and eProcess Web Client, a thin user client that allows secure access to Web content. Pricing starts at approximately $50,000 per server.

Quality of Service

Quality of service is a measure of the ability to control and assign network bandwidth to specific traffic so as to provide predictable levels of IP-based data throughput based on the importance of the business process associated with that traffic.

QOS Keeps Packets Moving



BY SAMI LAIS

QUALITY OF service (QOS) is a concept that's been around for years. One can argue that without QOS, a service-level agreement and a dollar gets you a cup of coffee.

When traffic is heavy, load balancing can help by redirecting traffic to another server and easing bottlenecks. Some switches can distinguish types of traffic, such as file transfer protocol and the HTTP Web protocol, and direct each according to defined rules.

The resulting network utilization reports can look pretty good. But put your head in the fireplace and your feet in a bucket of ice, and the average temperature looks good, too.

QOS lets managers direct, at a more granular level, how traffic for a particular application moves through the network's routers and switches.

But QOS involves more than specifying which traffic gets through the gate first. It's the foundation for policy-based networking. A policy defines how to use network resources under specific conditions and how much bandwidth to allot. A network manager can provide resources based on the data flow's business value — for example, giving a stock-trading transaction priority over an information request.

Policies can recognize that some data flows vary in amount and importance at different times. For example, sales traffic could be given precedence over accounting except at the end of every quarter, when the accounting department must calculate and generate reports.

Policy definitions depend on several existing QOS standards. The Resource Reservation Protocol (RSVP) lets an application inform routers and switches about the QOS requirements for a particular transmission — bandwidth, jitter (packets arriving out of sequence) and latency (delay between a packet's arrival and its forwarding). Depending on these requirements and on the policies that have been set for routers along the path, resources are either reserved for or denied to the transmission.

RSVP ropes off network resources even if they're not fully used. That's good for applications like telephony, where dropped packets can make a transmission unintelligible.

The 802.1p standard lets a message header specify a packet's QOS, which is crucial for time-critical applications like videoconferencing.

Differentiated Services (DiffServ) technology reads packet headers to determine which QOS level the message should receive. Most communication today is "best effort" — no guarantee, just a promise to deliver the message as quickly as possible. That may not be helpful if you're trying to complete a sales transaction when everyone else is checking e-mail.

DiffServ allows varying service levels for different applications over the same network at the same time. A policy can ensure that a sales application is first in line for the transmission speed and quality it needs. What's left over gets apportioned to other applications.

Common Open Policy Service technology is used to communicate QOS parameters between devices.

Because of this multiplicity of standards, there's confusion over which standards need to be supported by devices and management software. Cisco Systems Inc., Nortel Networks Inc. and 3Com Corp. all make policy management software, but it's specific to their hardware. Vendors such as Framingham, Mass.-based IP Highway Inc. make multivendor policy-management software.

In Windows 2000, Microsoft Corp. supports QOS standards and has included application programming interfaces to implement QOS. Version 2.0 of CiscoWorks 2000, due later this year, will support QOS.

Support should also grow with the Directory Enabled Network (DEN) initiative. DEN standards allow the association of applications — including QOS data — and let users with network resources store the information in a directory that other applications, devices and services can access.

A further barrier to QOS implementation is that service providers need to implement QOS peering agreements by agreeing on which standards to use and on how to implement them. But the biggest impediment may be that QOS hasn't been needed on LANs, where bandwidth is cheap and overprovisioning relatively easy. But with bandwidth hogs like voice and streaming video coming, QOS will likely become far more important. ▶

QOS is for Web Sites, Too

QOS began as a way to control network bandwidth, but end-to-end QOS demands that information technology managers extend the concept to application performance.

"Certainly, the increased interest in networking open standards has raised a new level of challenges around QOS," says Warren Wilson, an analyst at Summit Strategies Inc. in Boston. "Customers are going to want their Internet applications to perform as well as their in-house applications."

For Web applications, slowdowns can be traced to servers more often than to networks, says Rosemane Chiovan, Hewlett-Packard Co.'s WebQOS alliances manager. "If you have a reasonably fast Internet connection and you're trying to complete a transaction such as a stock trade over the Web, of a 10-second wait, two seconds is the network and the rest is the server," she says.

HP's WebQOS 2.2, which was released in July for HP-UX, Windows NT and Windows 2000, assigns priority to Web browsing sessions based on transaction activity. When site traffic spikes, priority can automatically shift from browsing sessions to revenue-producing transactions, Chiovan explains.

Tests by San Mateo, Calif.-based Keynote Systems Inc., a Web site performance monitoring service, "show an average increase of 40% in the number of completed transactions during times of heavy demand," Chiovan says.

During a peak hour, one grocery-buying Web site saw a 30% increase in completed shopping-cart checkouts, resulting in $12,000 more revenue for the hour, she says.

WebQOS 2.2 for Windows NT and Windows 2000 is $8,000 per box. The HP-UX version and WebQOS 2.2 for Solaris, set for release in August, are processor-based and start at $12,000. – *Sami Lais*

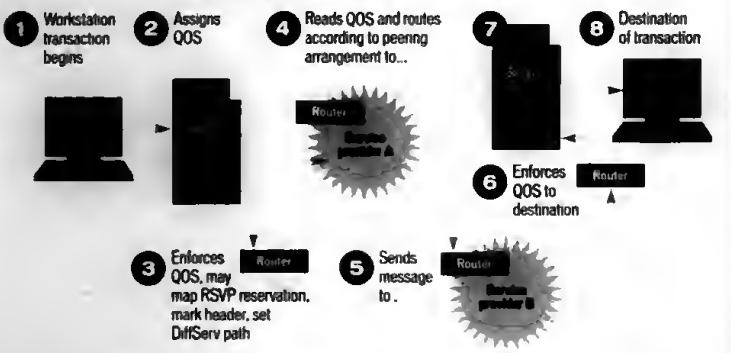
■ *Use this or technologies or issues you would like to learn about in QuickStudy. Please send your ideas to quickstudy@computerworld.com.*

Quality of Service

DEFINITION

Quality of service is a measure of the ability to control and assign network bandwidth to specific traffic so as to provide predictable levels of IP-based data throughput based on the importance of the business process associated with that traffic.

QOS Keeps Packets Moving



BY SAMI LAIS

QUALITY OF service (QOS) is a concept that's been around for years. One can argue that without QOS, a service-level agreement and a dollar gets you a cup of coffee.

When traffic is heavy, load balancing can help by redirecting traffic to another server and easing bottlenecks. Some switches can distinguish types of traffic, such as file transfer protocol and the HTTP Web protocol, and direct each according to defined rules.

The resulting network utilization reports can look pretty good. But put your head in the fireplace and your feet in a bucket of ice, and the average temperature looks good, too.

QOS lets managers direct, at a more granular level, how traffic for a particular application moves through the network's routers and switches.

But QOS involves more than specifying which traffic gets through the gate first. It's the foundation for policy-based networking. A policy defines how to use network resources under specific conditions and how much bandwidth to allot. A network manager can provide resources based on the data flow's business value — for example, giving a stock-trading transaction priority over an information request.

Policies can recognize that some data flows vary in amount and importance at different times. For example, sales traffic could be given precedence over accounting except at the end of every quarter, when the accounting departmeot must calculate and generate reports.

Policy definitions depend on several existing QOS standards. The Resource Reservation Protocol (RSVP) lets an application inform routers and switches about the QOS requirements for a particular transmission — bandwidth, jitter (packets arriving out of sequence) and latency (delay between a packet's arrival and its forwarding). Depending on these requiremeots and oo the policies that have been set for routers aloog the path, resources are either reserved for or denied to the transmission.

RSVP ropes off network resources eveo if they're not fully used. That's good for applications like telephony, where dropped packets can make a transmission uniotelligihle.

The 802.1p standard lets a message header specify a packet's QOS, which is crucial for time-critical applications like videoconferencing.

Differentiated Services (DiffServ) technology reads packet headers to determine which QOS level the message should receive. Most communication today is "best effort" — no guarantee, just a promise to deliver the message as quickly as possible. That may not be helpful if you're trying to complete a sales transaction when everyone else is checking e-mail.

DiffServ allows varying service levels for different applications over the same oetwork at the same time. A policy can ensure that a sales application is first in line for the transmission speed and quality it needs. What's left over gets apportioned to other applications.

Common Open Policy Service technology is used to communicate QOS parameters between devices.

Because of this multiplicity of standards, there's confusion over which standards need to be supported by devices and management software. Cisco Systems Inc., Nortel Networks Inc. and 3Com Corp. all make policy management software, but it's specific to their hardware. Vendors such as Framingham, Mass.-based IP Highway Inc. make multivendor policy-management software.

In Windows 2000, Microsoft Corp. supports QOS standards and has included application programming interfaces to implement QOS. Version 2.0 of CiscoWorks 2000, due later this year, will support QOS.

Support should also grow with the Directory Enabled Network (DEN) initiative. DEN standards allow the association of applications — including QOS data — and let users with network resources store the information in a directory that other applications, devices and services can access.

A further barrier to QOS implementation is that service providers need to implement QOS peering agreements by agreeing on which standards to use and on how to implement them. But the biggest impediment may be that QOS hasn't beeo needed on LANs, where bandwidth is cheap and overprovisioning relatively easy. But with bandwidth hogs like voice and streaming video coming, QOS will likely become far more important.



■ *Are there technologies or issues you would like to learn about in QuickStudy? Please send your ideas to quickstudy@computerworld.com.*

Bringing Together A World of Information

The Digital Earth project merges data with global breadth and local depth. By Todd Weiss

VIRTUAL SEA of information exists out there. There are infrared satellite photographs that detail cities and farm fields, along with databases bulging with information on transportation, commerce, population, crime, food production and everything in between.

Yet much of the data stored around the globe can't easily be used with other information. The data incompatibilities may result from using different file formats or coordinate systems (the mathematical means of locating a particular spot on the globe). Also, some metadata, which is information that describes the data itself, is missing.

Today, only a few experts know how to merge the combined raw data and look at it in new and useful ways. But that could be changing.

The Digital Earth program is a global effort to find easy ways for anyone, anywhere, to quickly get information from servers worldwide and blend it with other data on a desktop, regardless of any inherent incompatibilities in the data sets.

The uses for such a technology abound, from allowing a computer maker to map spare-parts inventories in regional warehouses to giving officials the chance to map a hurricane and quickly plan for mass evacuations of populated areas via major highways.

Digital Earth could also allow businesses to analyze employment data, rail corridors, parcel maps, demographic data and commerce data — all at once — to help rough out a new site for a manufacturing facility, without costly and time-consuming legwork.

"This is like the '60s, when we wanted to go to the moon," says one potential user, Rajesh Dave, a systems administrator in the geographic information system (GIS) department for Pennsylvania's Lancaster County. "We're at that stage."

Group Effort

Digital Earth is being spearheaded in the U.S. by NASA. Joining the space agency are the U.S. Geological Survey and the Environmental Protection Agency, along with foreign nations and companies such as Autodesk Inc. in San Rafael, Calif., Microsoft Corp. and Sun Microsystems Inc., which are all participating in a worldwide project that began in 1998.

Using Digital Earth, it will one day be possible to put together complex combinations of data, using a browser-equipped computer and typing in a request, say information technology professionals.

With Digital Earth, a user could choose a data source, such as a road map, on his browser and then select a region to analyze. The user could then add other data to the selected region as easily as clicking on any other choice on a menu. The user would quickly have a map with multiple layers of data that provides much more detail and information than is readily available today.

On to the Next Level

Currently, to merge incompatible data sets for such a map, you'd have to do a lot of custom programming or use complicated and costly GIS software.

The Digital Earth project hopes to solve that problem not by changing the data but by standardizing how it's cataloged and retrieved, through an OpenGIS standard. The data will be stored as it is today, in private servers around the globe. The servers will be linked by high-speed networks to route the data to processing centers and on to users. Intelligent agents will seek out and provide the data, instantly sending it where it's needed.

In preparation, the IT experts working on the Digital Earth project developed a Web-mapping test bed to see whether their theories would work. The test bed ultimately functioned properly and established special standards, called the OpenGIS Web Map Server Interface Specifications, to ensure that the system can be expanded to work around the globe on a huge scale.

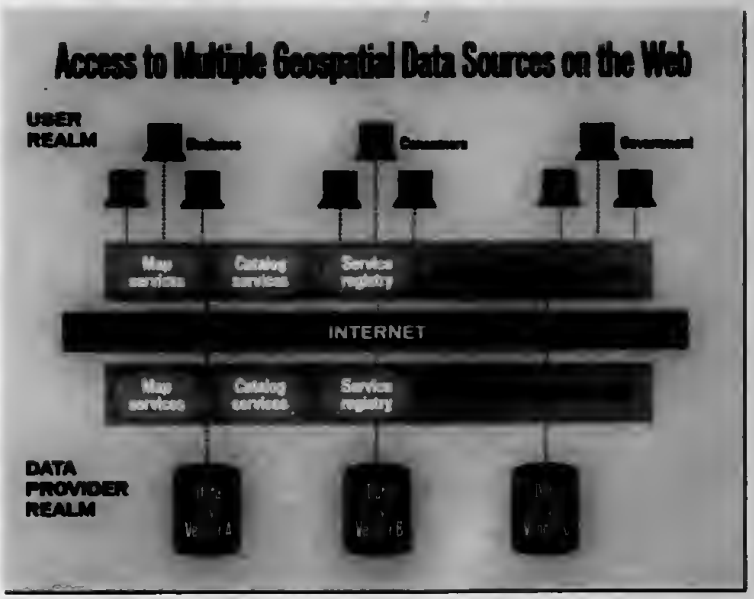
A second test-bed project is being conducted to advance the technology to the next level. "Nobody has to change their data sets or create new data sets," says Thomas Taylor, the program manager for Digital Earth efforts at NASA's Goddard Space Flight Center in Greenbelt, Md.

What's being created is an environment that will let data be brought together easily, not an entity that will act as a huge data repository. By letting data remain on individual servers, it can continually and more easily be updated.

The data could also include weather statistics, roads, waterways, voting information, census data, zoning districts and much more — almost any information that is "geospatial," meaning it can be referenced to a given spot at a given time.

The project is being driven by the public sector as well as the commercial market and will likely include some free data. But no one knows just when it will be ready for everyday use, Taylor says. "You'll know you're there when you're there," he says.

Jeff de La Beaujardiere, an associate research scientist at the University of Maryland who's working at Goddard, says the project reminds him of the development of the Internet since 1995, when Net use took off. "Digital Earth will do for geo-referenced information what the World Wide Web did for text and multimedia," he says.



New Wine, Old Apps

Can you run Windows apps without Windows? A lot of good programmers are working toward that goal. By Peter Wayner

FOR MANY PEOPLE IN THE COMPUTING industry, the fight card for the next several years is dominated by one colossal battle for supremacy: Windows vs. Linux. At first glance, the issues seem simple. Microsoft will offer software compatibility and stability, while Linux will counter with low cost and full access to everything under the hood. Some see it as a battle between being coddled (or regulated) and being free.

When the issue is framed in these terms, it's often very easy for some information technology managers to choose sides. Retraining staff to use another word processor or spreadsheet application would be expensive. Microsoft Word and Excel run on the PC and the Macintosh. So choosing to stick with Windows seems to be a simple and safe decision.

Hidden in the shadows, outside the spotlight of hype, however, is a serious open-source software project that is aiming to give Linux, Unix and other operating systems the chance to provide 100% software compatibility with Windows applications. This project, known as Wine, could give Linux the chance to offer both freedom and coddling to the world.

What Is It?

The Wine project is an open-source initiative designed to clone the most important functions that the Windows operating system offers to programmers. These features, known as the Win32 application programming interface (API), include all the basic functions for standard tasks like accessing disk drives and memory, interfacing with peripherals such as printers and scanners, moving data across the Internet and the thousands of other tasks a modern operating system does for its programs.

Wine is a recursive acronym for "Wine Is Not an Emulator," an inside joke that revolves around the basic design elements of the project. The group is cloning Windows by rewriting raw source code instead of simply emulating it. Several companies already make Windows emulators, programs that run noticeably slower because they must translate each instruction. Connectix Corp., for instance, sells Virtual PC, which lets a Macintosh run Windows software by painstakingly translating every x86 instruction into something the Macintosh can understand. It also requires a license from Microsoft.

The Wine project is turning out native x86 code written in C language. Anyone can compile it and link it with a program to produce working Dynamic Link Libraries and other libraries. The group aims to produce a package just like Windows.

When the Wine group is finished, ordinary Windows programs will run on any computer with an Intel x86 chip, even if there's no software from Microsoft on the machine. Many project members are concentrating on combining Wine with Linux, but the work could be combined with other operating systems. One related project, named Odin, is aimed at making Wine work with OS/2. Software destined

Pros & Cons of Wine



- Support for DOS, Windows 3.x, Win32 binaries; Win16, Win32 function calls
- X Window System Version 11-based graphics display supports full graphics device interface (GDI) and many new features of GDI32
- Reverse-engineering design ensures "bug-for-bug" compatibility
- Windows Sockets TCP/IP networking
- Automatically generated API documentation
- Internationalization - Wine supports 18 languages



- Partial support for Microsoft's DirectX media standard in games
- Partial Unicode support
- Many major applications such as Microsoft Office don't run fully
- Still under volunteer development; new builds biweekly

for other platforms like the Mac will be much easier to translate using the Wine libraries.

Programmer Robert Coeyman, who donates time to the Wine project, says such tools let "the Windows-only programmers start supporting alternate operating systems with limited effort. You can almost develop two products in the same time now, and when the project is completed, you will be able to create one code base for many operating systems."

Who?

The open-source project draws on a wide range of volunteers, including some who are paid by their employers. Some are in it for the technical challenge. Some want to save the cost of a Windows license. Some just want to see Microsoft cut out of the loop.

Corel Corp. in Ottawa is one of the highest-profile corporate contributors to the project. The company wants to port its graphics and productivity software to the Linux platform, so its programmers are contributing new code to Wine as the most efficient route. Corel has been a leader in many areas of the project, including making sure that Wine correctly handles database calls made through Open Database Connectivity. The project's leaders say these details are done — at least until Windows is revised again.

Why?

Dave Hawkes, a software engineer at CADLink Technology Corp. in Boylston, Mass., says he's experimenting with Wine because his company's product is often run on stand-alone machines where users rarely access the features of Windows. If CADLink can save its customers the cost of a Windows license, they can pass the savings on to their customers.

"We're very much in a vertical market, so the platform isn't as important to us. They use our software to run a business, and Windows or Linux is a small part of the cost," says Hawkes.

Wine performs "surprisingly well," he adds. "Our software has a surprisingly long history. Its roots go back to Windows 2. It's a medium-size project. You're probably talking about 500k lines of code. There are a number of issues."

Many companies are experimenting with using Wine to save costs. One programmer, who asked not to be identified, said he was working on replacing the Citrix Systems Inc. server with Linux boxes running Wine. In the current setup, the central Citrix Windows NT server runs the software and displays the results on client machines. With more than six or seven users, however, the server is too slow. This programmer says he wants to save the cost of the NT licenses for all the client machines. Putting Wine on the low-cost Linux machines saves the price of these licenses and offers better performance at peak times.

How Good?

Right now, the Wine project is far from finished, but participants can report some startling successes. Many popular programs like Microsoft Word and Internet Explorer run well, if not perfectly. Almost all the features are available. In many cases, games are also well supported, largely because many developers in the project care about games and frequently test the system with games, using the results to look for new sections of Wine that must be improved.

Wine participants track the project's success with a central database of reports on how well Wine runs each application. Programs like Autodesk Inc.'s AutoCAD, Napster and Starcraft Broodwars receive a rating of 5, which means they run almost perfectly.

Not all reports end as well. Some users can't get Microsoft Word running. Others find strange glitches. One report said, "Adobe [Acrobat] opened up fine. [But] after opening a PDF file, the page was horribly rendered. Text was small and highlighted in blue, no graphics were shown for this document."

Many reports fall in between. "Getting it installed meant holding your nose just right, etc., and there are occasional screen glitches, but that is usually fixed by minimizing and restoring the window," one person wrote. "I only use limited facilities [in Quicken], though. I don't use the Web or inventory stuff or the address book, just use the accounts and some reports. For those things, it's been working perfectly!"

Wine developers use these reports to decide what to work on next. Often, the people who find a bug are the ones who try to fix it. And each contributor has a personal reason for being on the project. George Boutwell, a developer, says, "My next goal is to get a little less-known accounting program to work nice in Wine. If I can get that working, my wife and I would be quite happy to never boot Windows again."

Judge Jackson's Part

The Wine project is also caught up in the breakup of Microsoft ordered by Judge Thomas Penfield Jackson. One proposed remedy for the case would force Microsoft to make its source code and APIs available to competitors that want to ensure compatibility. Wine is one such group. One member of the Wine group, who requested anonymity, says the decision could "be a great victory for the Wine project. . . . And it would remove the need to illegally reverse-engineer parts of Windows to get the answer."

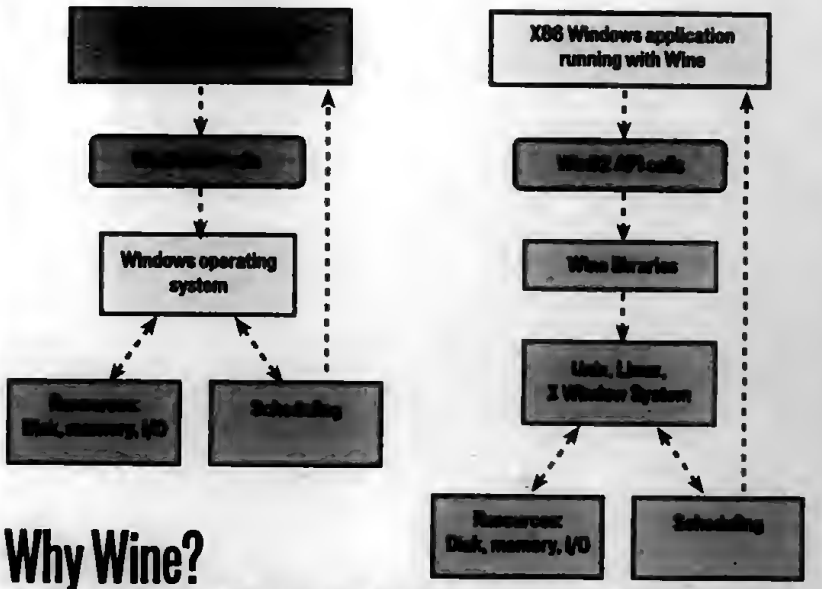
Coeyman says, "It depends on what Microsoft really does as opposed to what it promises. Complete, open and honest documentation would help us." But no one seems to think this help will come soon.

The Wine group isn't waiting, in part because it wants to write cleaner software. It gets the benefit of hindsight when programmers clone the architecture, and this makes it much easier to create something better. The Wine code is consistently smaller than the corresponding code from Microsoft. The group can't claim it's less buggy, since it aims to duplicate the bugs perfectly to ensure compatibility. Still, the group hopes to make the API more transparent to programmers. People who have trouble getting their software to work with Windows may now try to get it working with Wine first.

In fact, the Wine code is sort of a living, breathing compendium of the non-Microsoft knowledge of the Win32 API. It isn't perfect, but it can be a big help to a programmer trying to understand Windows.

The biggest winners may be the software users and IT professionals everywhere. The new upgrade prices for Windows are steep, and Microsoft includes a number of features related to manageability and efficiency that encourage an organization to upgrade all its machines at once. This can be a big burden for small businesses, where most workers are still quite happy with Windows 95. Wine lets them run old software on a new operating system without paying heavily. As one Wine user said, "Yes, it's not perfect, but neither is Windows." So maybe they're doing a great job cloning the effect.

Wayner is a freelance writer in Baltimore. You can reach him at pcw@flyzone.com.



SOURCE: WINEHQ.ORG/DOCUMENTATION WWW.WINEHQ.COM

Why Wine?

Wine is an implementation of the Windows 3.x and Win32 APIs on top of the open-standard X Window System and Unix. Think of Wine as a Windows-compatibility layer. Wine provides both a development tool kit for porting Windows sources to Unix and a program loader, allowing unmodified Windows 3.1/95/NT binaries to run with Intel Unixes. Wine works on most popular Intel Unixes, including Linux, FreeBSD and Solaris. It doesn't require Microsoft Windows because it's a completely alternative implementation consisting of 100% Microsoft-free code, but it can optionally use native system Dynamic Link Libraries if they're available. Wine comes with complete sources, documentation and examples and is freely redistributable, under licensing terms similar to those of BSD.

Breadth of Expertise Defines ASP Start-up

With a menu of offerings, NaviSite wants to be your full-service ASP

BY AMY HELEN JOHNSON

TOM WARREN, the information technology manager and sole Internet guru at technical book retailer Books24x7.com Inc. in Norwood, Mass., didn't have any hope of meeting the company's two-month deadline for launching a subscription-based e-commerce site with the five other engineers on hand.

Instead of making a swift — and probably reckless — personnel expansion, he opted for SiteHarbor, a Web site hosting and consulting service from NaviSite Inc. "They provided me with a lot of engineering expertise that we didn't have in-house," Warren says.

NaviSite is a "ping, power and pipe" managed-service provider with staff consultants and secure data centers in Andover, Mass., and San Jose [Technology, May 29]. CEO Joel B. Rosen says the company's key differentiator lies in its ability to provide more than the baseline locked-cabinet service of an equipment co-location service provider.

One-Stop Shopping

NaviSite rents Web applications and supports sophisticated technologies and processes such as database systems fail-over and e-commerce management. It also hosts events that have one-time peak-capacity needs and consults on scalable site development.

The full-service model was what attracted Warren. In addition to cost, level-of-service guarantees and geographical proximity, he made his decision based on the breadth of services offered.

NaviSite is one-stop shopping, he says. The types of expertise Warren tapped included help setting up a Cisco LocalDirector load-balancing appliance and general advice on using SQL databases.

But Warren acknowledges that if he was in a larger company with more internal skills and less reliance on outside experts, he might not have gone with NaviSite.

A larger company might have chosen Exodus Communications Inc. in Santa Clara, Calif., or BBN Technologies in Cambridge, Mass., which provide hosting services that Warren says he also checked out but didn't feel fit his needs.

In the view of analyst Jeanne Schaaf at Cambridge, Mass.-based Forrester Research Inc., NaviSite's soup-to-nuts services don't distinguish the company at all.

"I don't think they have settled a strong focus and are executing against that focus," she says, calling the company's strategy a mishmash of directions and partners.

Preston Dodd, a senior analyst at Jupiter Communications Inc. in New York, is also lukewarm on NaviSite. With hundreds of competing companies crowding into the hot site development and hosting market, Doss says, everyone needs to find a differentiation.

That's difficult, he explains, when there are "no patents or innovations that no one else can match, because it's a service business."

On the other hand, Dodd says, NaviSite is as good as any other vendor in key areas like customer satisfaction, management vision and employee talent and has decent name recognition.

Branding Needed

But it needs to take that further, Dodd says. The company's main hurdle is branding itself so it gets a shot at bidding on the best jobs, such as being the main project leader for a company like General Motors Corp. "The challenge for NaviSite is that it isn't necessarily on the short list of names that roll off the tongue as the usual suspects [in the electronic-business development field]," he says.

Rosen says he thinks that customers do value NaviSite's blend of services and that they understand how bringing his staff on board can help them get a site up quickly and allow them to create a more complex site when NaviSite is handling the operations end.

Rosen is pushing forward with plans to expand the company's skills list into areas such as application expertise (like the SilverStream eBusiness Platform from SilverStream Software Inc. in Billerica, Mass.), streaming voice and video technologies, and new capabilities in stress-testing sites.

The company is also expanding its facilities, targeting international customers with data centers outside the U.S. and adding to its uptime infrastructure with fail-over technologies across multiple data centers. ▶

Johnson is a Computerworld contributing writer in Seattle. She can be reached at amyhelen@pobox.com.



CEO Joel B. Rosen says NaviSite's advantage is it provides one-stop shopping for corporate customers

COMPUTERWORLD emerging companies

NaviSite Inc.

Location: 400 Minuteman Road, Andover, Mass. 01810

Telephone: (888) 298-8222

Web: *www.navisite.com*

The technology: Web site hosting and application service

Why it's worth watching: The company offers a wide range of application hosting services, providing one-stop shopping to its customers.

Company officer:
- Joel B. Rosen, CEO

Milestones:
- February 1997: Spun off from parent company, Andover, Mass.-based CMGI Inc.
- October 1999: Initial public offering (IPO)
- January 2000: Opened two data centers

Employees: 300; 80% annual growth predicted

Burn money: Raised $77 million in its IPO

Services/pricing: SiteHarbor hosting services; price is negotiable

Customers: Books24x7.com Inc., Dress Barn Inc. and AltaVista Co.

Partners: Microsoft Corp., Dell Computer Corp., Sun Microsystems Inc., Compaq Computer Corp., Cisco Systems Inc., Oracle Corp., Akamai Technologies Inc. and others

Red flags for IT:
- NaviSite has many competitors, so shop around before you buy.
- Sooner or later, the market will shake out. Will NaviSite's approach give it the edge it needs?

[the buzz] STATE OF THE MARKET

Game of Survivor

Clay Ryder, vice president and chief analyst at Zona Research Inc. in Redwood City, Calif., gives NaviSite points for running well-designed data centers in multiple locations. "They're going after this [market] from a very industrial level," he says. But the company's advanced technology notwithstanding, Ryder warns that earning customers will be hard. When it comes to a mission-critical application like a corporate e-commerce site, he says, most companies will think long and hard before deciding to outsource the responsibility.

NaviSite occupies a crowded niche. Hundreds of companies offer similar services, says Preston Dodd, a senior analyst at Jupiter, and most of them aren't unique. The good news for NaviSite and its competitors is that many CEOs are trying the application service provider/hosting option, and there's plenty of work to go around, he says. While that will ensure sales growth in the short term, in the long term, the Web site hosting market will operate like any other market: Only the best will survive.

Eight Questions

Given the competition, how does an IT manager choose the right partner to handle the company Web site? Here are some questions to ask before you commit, according to Ryder and Dodd:

- What are your goals for the site? Know them, and make sure the hosting service understands them.
- Does the vendor have the applications you need, and does its staff really know how to manage them?
- What's the vendor's infrastructure? Visit the network operations center and check into its redundant systems, security and network capacity.
- Has the company met its quality-of-service guarantees? Has it made the deadlines for launching and upgrading sites under its management?
- What is the staff's training and experience? Meet and interview the people who will handle your Web site.
- Is the facility hosting other sites similar to yours? Talk to those customers about their opinion of the facility and staff.
- How eager is the company to earn your business? Will you be just another client, or a partner?
- Does the company have the financial backing to operate? It's hard to move a complex site to another hosting service; don't be surprised by a "going out of business" sign on the data center's door.

– Amy Helen Johnson

MARKETPLACE

For more information on advertising,
call (800) 343-6474 Ext. 4000

WE BUY USED COMPUTER EQUIPMENT



PACE/BUTLER
CORPORATION

800-319-9355
Fax: 405-755-1114
http://www.pace-butler.com

13900 N. Harvey Ave.
Edmond, OK 73013-2431

FAST • FAIR • FRIENDLY • Since 1987



If rollerblades in the data center is your solution f cross platform manag you need the global MAINT H Virtual Comman ter.

The installation of global MAINTECH's Virtual Command Center represents the first step in implementing a cross platform management solution. This first step delivers Console Consolidation – bringing the operation and control of all servers and/or LPARs in your enterprise to a single location. Of course, you may have alternate locations as well. Additional steps include Automated Monitoring and Automated Operation.

Time to implement the Virtual Command Center will amaze you. Contact us today.

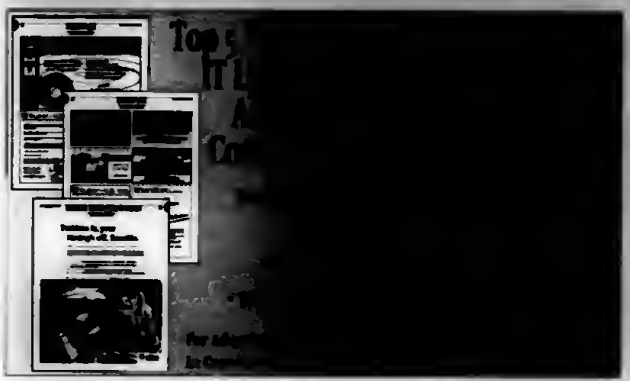
Singlepoint Services · AlarmPoint · CYBEX · APEX

AlarmPoint
Automated Notification & Response

Free Demo!

Point 3.2
by visiting our
www.SinglepointSys.com
or call 888-221-0760

SPECTRUM · HITACHI · HP OpenView · HP OpenView · Internet Security Systems · TIVOLI · Unicenter · NETIQ · Singlepoint SYSTEMS



THINHARDWARE.COM
Rack Mountable Data Center Quality Servers

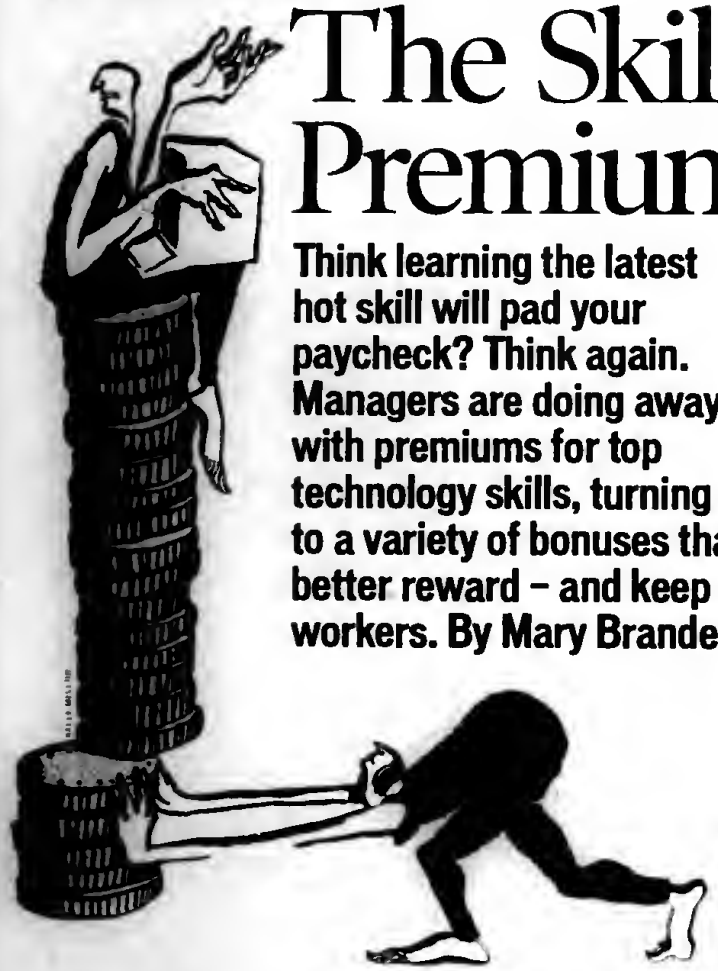
Model A1: 1U in height
42 systems will fit in a standard rack
Single PIII Processor
Single SCSI or EIDE Hard Drive
Intel Mainboard, Pro100 NIC, CDROM, Floppy

Model A2: 2U in height
21 systems will fit in a standard rack
Dual PIII or Xeon Processors
3 SCSI or EIDE Hard Drives
Intel Mainboard, Pro100 NIC, CDROM, Floppy

Visit our website and configure a server for your specific needs.
http://www.thinhardware.com
CBH Consulting: 1155 North 9th Street Stroudsburg, PA 18360

Call toll free:
1-888-819-5600

Demise of The Skill Premium



Think learning the latest hot skill will pad your paycheck? Think again. Managers are doing away with premiums for top technology skills, turning to a variety of bonuses that better reward – and keep – workers. By Mary Brandel

YOU'VE JUST interviewed a candidate for an open Oracle database administrator position. Now what do you do?

A. Immediately offer a salary that's 25% higher than the industry average for that job title. Who knows when another Oracle database administrator will come along?

B. Offer a competitive salary, supplemented with workplace perks. After all, money isn't everything.

C. Structure a compensation package that rewards the candidate with bonuses throughout the year. That way, you'll have more control over your payroll.

Not long ago, you could have picked A, B or C and considered yourself a savvy hiring manager. Midway into the year 2000, however, option A is increasingly considered more hasty than prudent. Having lived through Y2k fever and a market correction, information technology managers have become slightly more patient and a bit more conservative about the outer limits of salary premiums.

"A year ago, it was the open-bank-vault syndrome because people were so desperate, and we had the Y2k thing hearing down," says Ed Grasing, a director at Pencom Systems Inc., a recruiting firm in Atlanta.

Today, Grasing says, companies are more conscious of what they're spending. "People are more patient about finding a person they trust rather than anybody with a pulse who walks in with Java or C++ skills," he says. "Just because you've got Java on your résumé, you're not going to get $75 an hour."

"Organizations in previous years have been in panic mode," agrees Vincent Milich, director of the IT effectiveness practice at the New York office of Hay Group, a compensation consulting firm in Philadelphia. But pay inequities caused by jacked-up salaries can inflict management turmoil.

"You end up with people sitting next to each other doing the same job but with a 30% to 40% difference in compensation," Milich says. "It shortly becomes unjustifiable because the market catches up with the demand."

"Companies have moved to substitute boouses for raises, since they don't have to repeat them in subsequent years the way they have to continue paying a higher salary after a raise," says Janet Ruhl, director of Realrates.com, which publishes the Real Rate Survey, and author of *Computer Job Survival Guide*, due in October from Technion Books.

Bonuses are the preferred route at the Mahwah, N.J., office of Atlanta-based United Parcel Service of America Inc. "We're very team-oriented, so with regard to compensation, we have to be very conscious of how it affects the existing workforce," says Jim Diancola, a workforce planning manager at UPS.

Just this year, UPS added sign-on boouses to its compensation plan "to help us be competitive and fill these harder-to-fill positions," says Diancola, citing skills such as Oracle, Tivoli and anything related to the Web, including Java, C, C++, Common Gateway Interface and Unix. However, he adds, "we're very careful how we use [the bonuses], and we continue to monitor their effectiveness."

Belk Store Services is similarly concerned about pay equities. "Our goal is to try to protect the people who are already here," says Don Harris, manager of staff development of the IT arm at Belk Inc. in Charlotte, N.C. "You do what you have to do to recruit people, but as we hire at higher ranges, we make adjustments for the people who are here."

Harris says that lately he has had to go to the top eods of the company's set pay ranges rather than aim for just above the midpoint. However, he adds, he hasn't had to make drastic salary increases in the past year.

"We didn't want to raise the salaries and then live with that when everything was over," Harris says. "We've tried to bold the line" by improving the company's benefits package, for instance.

But compensation doesn't just have to come in the color green, says John Putzier, president of FirStep Inc., a high-tech human resources consultancy in Prospect, Pa. "What attracts talent is the company's culture, its mission, whether it's fun to work there. Are the bosses jerks? The intangibles add up, and no matter what you pay, that's what gets people," he says.

That rings true for UPS. It recently adopted a five-day business-casual dress code throughout the information services group and started offering on-site banking and dry cleaning.

According to Putzier, the conservative approach to salary premiums isn't just a cooling of the market or a refusal on the part of employers to get blackmailed. "These salary scales have to max out at some point, and I think they have," he says. "And the companies that have maxed out will have to look at nonmonetary compensation. It's a wake-up call — why doo't we treat people like human beings and have some fun?"

Brandel is a freelance writer in Newton, Mass.

Skills That Thrill

In a recent study, IT professionals earning salaries of $75,000 and above, with bonuses of $25,000 and higher, were asked what skills they held. Here is what they said:

- Cisco
- Cold Fusion/XML
- E-commerce
- Enterprise system development
- Internet security
- IT consulting
- Java
- Mobile computing
- Network architecture
- Novell/thin client
- Oracle applications
- Oracle project management
- Product data management/ Metaphase
- SAP
- Siebel
- Unix, SQL, Windows NT
- Windows NT Engineering

SOURCE: REALRATES.COM



KAISER PERMANENTE®

Tomorrow: a cure
Today: the IT infrastructure that it's founded on

What matters most? Your family, your work. Your health. Today, everywhere you look, technology is making the difference in all these areas. At Kaiser Permanente, we're dedicated to enhancing health care delivery through state-of-the-art information tools. And the 3,500 experts at Kaiser Permanente IT are at the heart of that mission. Getting life-saving information where it needs to go. Talk about mission critical, target Kaiser IT.

Bring your expertise to Kaiser Permanente today in one of the following disciplines. Become involved in exciting initiatives such as Web development, extranet, intranet, enterprise data security solutions, network planning, client/server-based projects, network infrastructure, project management and technology planning.

Position Locations:
California, Colorado, Georgia, Hawaii, Maryland, Ohio, Oregon, and Washington D.C.

PC LAN
Seeking field technicians, administrators, desktop support specialists, LAN consultants and analysts with expertise in NT, Novell, TCP/IP, Lotus Notes, MS Exchange/Messaging, e-mail, LAN and WAN.

NETWORKING
Seeking administrators, consultants, WAN engineers, network design analysts and security consultants with expertise in UNIX®, Cisco hubs, routers, bridges, switches, Fast Ethernet, Token Ring, Frame Relay, ATM, AVR and Telephony.

TELECOMMUNICATIONS
Seeking analysts, consultants, software technical specialists and project managers with expertise in UNIX, Cisco hubs, routers, bridges, switches, voice, data, IVR, CTI, ACD, PBX, Nortel Passport, ATM, Frame Relay and Call Center.

DATABASE ADMINISTRATION
Seeking professionals with experience in a large, complex multi-vendor database environment who possess skills in any of the following: Oracle, DB2, Sybase, IMS, physical database design, DBMS utilities in UNIX or MVS environments; O-O methods preferred.

DATA ANALYSIS
Seeking professionals with experience in logical database design, data modeling/Entity-Relationship diagramming, meta-data management and ERWin/Platinum; O-O methods preferred.

DATA WAREHOUSING
Seeking professionals with experience in Oracle, Essbase, Business Objects (Sequent a plus), data warehouse design and data transformation/extraction.

APPLICATIONS DEVELOPMENT
Seeking programmer analysts, systems programmers, systems analysts, application developers, group leads and operations specialists with expertise in PowerBuilder, C++, C, Visual Basic, Sybase, Oracle, UNIX, IEF/Composer, COOL:Gen, ADS Plus, MUMPS, SAS, EDI, MQ, OBDC, OCC, Corba, COBOL, COBOL II, JCL, MVS, DB2, CICS, Model 204, IMS, MANTIS, Pega Systems, Tandem, TAL, DEC/VAX/ VMS, PeopleSoft and Tesseract.

BUSINESS ANALYSIS/ PROJECT MANAGEMENT
Seeking analysts, consultants and project managers to oversee projects utilizing MS Project with expertise in planning and implementation within an IT environment.

WEB DEVELOPMENT
Seeking senior Web developers to develop Web applications using Java™, application servers, and Oracle in a UNIX environment.

SOFTWARE ENGINEERING/ SYSTEMS ARCHITECTURE
Seeking expertise in emerging technologies for enterprise systems on an object-oriented or UNIX platform.

LOTUS NOTES ADMINISTRATION/DEVELOPMENT
Seeking administrator with experience in large scale Notes infrastructure. Experience with R5, Domino 4.X or higher, hands-on administration expertise, troubleshooting, replication, mail routing, calendar and scheduling problems. Development candidates should possess strong Lotus Script and NT expertise.

TECH WRITING/INSTRUCTIONAL DESIGN
Seeking experts in Adobe Illustrator®, Microsoft Office Suite, HTML and Visio.

UNIX SYSTEM ADMINISTRATORS
Seeking UNIX System Administrators with at least 3 years of system administration experience in AIX and/or Solaris™.

Find out more about Kaiser Permanente Information Technology by visiting **www.kp.org/jobs**; click on "IT Division" tab. **Submit one resume only**, referencing **Job Code: PAD-NWD0622**, preferably by e-mail to: kpitjobs@kp.org, or fax to: 1-800-839-5140. The tangible and intangible benefits of working for an organization of our size and scope will change your career perspective in a healthy way. Affirmative Action/Equal Opportunity Employer. All trademarks belong to their respective companies.

www.kp.org/jobs



Choice. In today's job market, it's pretty much all yours. But finding the right [illegible] job in itself. We can help. Tap into our exclusive network of hot start-ups, service firms and Fortune 1000 companies. Select projects that [illegible] your unique skills and experience. Take advantage of powerful Internet-based tools designed to help you run your business better. And do it all from the comfort of wherever you damn well please.

SkillsVillage.com™
A new force at work

Ready to Turn Vision Into Value?



The Business of e-Business

The eBusiness Strategy Conference Series is the leading forum specifically designed to provide business and IT leaders with the insights and strategies to derive real value from their e-Business initiatives.

VISION BEYOND THE STATUS QUO

Delivering on e-Business promises takes more than glitzy technology. Success in e-Business is formed by vision—the ability to see and articulate possibilities. It is driven by strategy—the plan for implementing the vision before the competition does. It is about reaching the right targets through marketing and promotion. It results from creating value to its constituents whether they are customers, partners, employees or shareholders. Success comes from drawing together the best mix of business, technical and creative people and ideas, and striving to meet a common goal. It is to these principles that we dedicate the eBusiness Strategy Series.

eBusiness STRATEGY℠ CONFERENCE SERIES

San Francisco • October 2-4, 2000
New York • November 13-15, 2000

For more information see our web site
www.brainstorm-group.com
or call 508-393-3266



3com

You and 3Com...

Connecting People to Information

VOICE

Redefine what it means to make a call, surf the web or even manage household appliances. As a worldwide leader in remote access systems, we build carrier-class network solutions that bring people and information together.

VIDEO

New business challenges call for e-Networking solutions. At 3Com we're bringing to market solutions for a new generation of communications networks.

DATA

Stronger and with more support than ever, **3Com's Carrier Systems and Residential Connectivity** teams are leading the networking world with products that are building the vision of what the industry will become. Our Chicago-based divisions have the resources and visibility to take 3Com to the next level. Get involved by moving your career to 3Com and help us improve the way we connect people to information.

Positions are currently available in:

Software Development
Hardware Engineering
Firmware Engineering

We offer industry leading salaries and benefits. To learn about specific positions, please access our website at: www.3com.com or send your resume via one of the following:

e-mail: craig_osmond@3com.com
fax: 847-222-3350
mail: 1800 W. Central, M/N 107, Mt. Prospect, IL 60056
3Com is an equal opportunity employer m/f/d/v

The freedom to be outstanding.



Enough rope to succeed.

It's just one of the things that makes Cap Gemini Ernst & Young such a great place to achieve. Enough room to think outside of convention. Enough room to grow as much as you want. It's because we're aware that our people bring us success. We call it the freedom to be outstanding. But being free doesn't mean you'll be alone. In fact, you'll benefit from the resources and leadership of one of the largest management and IT consulting firms in the world.

ERP CONSULTANTS

We have openings for ERP professionals (preferably with previous consulting experience) in the following areas:

- **Oracle** - You must possess applications and implementation experience in any of the following modules. HR, financials, distribution, order management, manufacturing.
- **Lawson** - Your background must include proficiency in applications plus implementation experience in all suites, especially financials, HR payroll and procurement.
- **Retek** - You must possess implementation experience.
- **J.D. Edwards** - You must possess in-depth knowledge and implementation experience in One World distribution, pricing, warehouse management, Microsoft, Novell or other software certification.
- **PeopleSoft** - Your background must include applications and implementation experience in HR payroll, benefits administration, and time and labor.
- **SAP** - You should have previous experience in HR and FICO modules and its implementation.

To join a company that values its people, contact Cap Gemini Ernst & Young. Please forward your resume, salary requirements and desired location to: **Cap Gemini Ernst & Young U.S. LLC, Dept. 50114, 630 Boston Road, Billerica, MA 01821; Fax Toll Free to: 1-800-505-2230; or e-mail: dept.50114@cgeycareers.com.** We welcome inquiries from applicants only; no third-parties or agencies please.

Proud to be an Equal Opportunity Employer

Visit us at http://cgey.ey.com

CAP GEMINI ERNST & YOUNG

How to get a better high tech job in 3 easy steps:

1. Go to dice.com
2. Go to dice.com
3. Go to dice.com



dice.com
High tech jobs online

170,000 high tech jobs, including your next one.

AN EARTHWEB SERVICE

---

drugstore.com

Be an Everyday Champion for Healthy Living

Want to work in the Seattle area with the best and brightest to bring the world a healthy way to shop? Join the drugstore.com team as an Oracle DBA Manager.

As an Oracle DBA Manager, you will lead a team of DBAs charged with maintaining and developing Oracle databases, preparing database specifications and database administration tools, maintaining data standards and providing the company with strategic database direction.

Your daily job functions will include:

- Providing technical expertise and leadership in the area of database management.
- Interacting and coordinating database development with the applications development team.
- Proactively tuning and refining all database instances in the enterprise.

You must have 2-3 years of experience in a managerial or leadership role, with 5-6 years of relevant technical experience. Specifically, you should have experience as an Oracle DBA in a 24/7 production UNIX and/or NT environment. Oracle 8.x and PL/SQL experience a must. Experience in Web application development, data warehouse administration, ASP, C++, VB and PRO-C would be a plus.

We offer an idea-driven, high-energy work environment, plus an excellent compensation package and great benefits.

Please send your resume to **jobs@drugstore.com**

drugstore.com is an equal opportunity employer.

Here .coms Allstate!

Allstate is a high-tech leader taking charge on the Internet. With the energy of a "dot com", and the resources of a global company, Allstate is looking for innovators in mainframe, client server, networking and web-based technologies.

Offering excellent benefits, compensation and a casual work environment, Allstate opportunities are right here in the Chicagoland area.

Make Allstate your #1 choice!

We're looking for Experienced Professionals with 2+ years of experience for the following positions:

- **Bank Architect** bank knowledge, N-Tier solutions
- **Datawarehouse Developers** UNIX, Oracle, PL/SQL
- **UNIX/NT Architect** with system administration
- **Network Diagnostics Engineers** with Sniffer experience
- **Network Security**
- **WAN/LAN Engineers** with Router & Switches experience
- **NT Systems Engineers** with experience in managing 25+ servers
- **UNIX Systems Administrators** With Sun Solaris and Legato experience
- **Oracle Programmer for Technical Support** with 3+ yrs experience
- **AS400/Oracle Tech Support** with experience in 15,000+ system environment
- **Transaction Systems** with CICS, JCL, TSO and ISPF experience, systems configuration management standards
- **DB2 Database Administrators**
- **Mainframe COBOL Programmers**
- **VB 5.0**, JAVA, Access programmers
- **ETI Programmers for Data Warehousing**
- **Testers/Analysts/DW Analysts** with systems experience in a mainframe/PC environment, WINRUNNER
- **Sr. Application Developers/Architects** with C/S, WIN DNA architecture, messaging solutions, OO analysis & design and full cycle development
- **SMS Support** 1.2 and 2.0 with Windows NT

Allstate. You're in good hands.

FAX your resume today to: Allstate Insurance Company, Attn: HORACOMP FAX: 800-526-4831, or email your resume to: www.allstatecareers.com. EOE M/F/D/V

www.allstatecareers.com

Technical Consultant (Software Applications Engineer). Analysis, design, develop and implement software applications using the COOL:Plex (formerly Obeydan) object-oriented technology. Requires a Master's degree or equivalent in Computer Science, Mathematics, Engineering or related field with three year experience in the occupation as a software engineer analyst/programmer or programmer. Experience must include COOL:Plex or Obeydan tool. Bachelor's degree and five years may be substituted for a Master's and three years experience. 40 hrs/wk, M-F 8-5. $70,000/yr. Job site: Englewood, CO. Send ad and resume/letter of qualifications to Colorado Dept. of Labor & Employment, Employment Programs, Attn: Jim Shimada, Two Park Central, Suite 400, 1515 Arapahoe Street, Denver, CO 80202-2177. Job #CO4668344

Call your ITcareers Sales Representative or Janis Crowley 1-800-762-2977

Business is a conversation.

Join in the conversation.™

[illegible] the foundation [illegible] stuff. Innovation. And more than ever we [illegible] using the Web to host these dialogs. All business [illegible] essentially a conversation, and Open Text lies at the heart of these conversations. We help companies connect in what matters most. People.

Our product Livelink is a highly scalable and comprehensive collaborative environment for the development of Web based Intranets, Extranets and e-business applications. Our products and services make dynamic collaboration a part of every business process, removing organizational and geographical barriers and accelerating the pace of [illegible] business [illegible].

[illegible] Open Text [illegible] conversation and be [illegible] one. The world's most [illegible] and fastest growing e-[illegible] tech companies [illegible]

Visit our Web site

www.opentext.com/careers

For High Tech Jobs go to www.dice.com

dice.com
High tech jobs online

NEED TO HIRE

careers.com

START WITH US.

Connect with the best!

Network World Career Fair

Atlanta, September 26th, 27th & 28th



If you're in the market for a new career challenge, make some key connections during the Networld & Interop Conference in Atlanta.

Top employers from across the US will join Network World Magazine in this three-day Job Fair.

For more information on how to register for Career Fair, please call (781) 769-8960.

NetworkWorld

IT careers

SYSTEMS ANALYST

NBC, the entertainment industry's most recognized brand, has an excellent opportunity for a well-organized, highly motivated Systems Analyst or Senior Systems Analyst to join the Business Contact group which is responsible for the Entertainment or Studios/Enterprises area.

Will have heavy interaction with end users to determine business requirements, then develop system specifications and implement cost-effective solutions Will also work closely with area team director to act on business needs, outline/implement I.T. solutions, and move the end solution into support mode.

Requires BSCS (or equivalent) and experience with web development efforts, including back-end databases Working knowledge should include: 32-bit Windows NT applications using Visual Basic versions 5 and 6 with SYBASE or MS SQL server databases; direct ODBC, RDO and ADO data access methods; object-oriented methodologies, client/server and thin client architectures, data warehouse concepts; web development techniques, Windows NT and LAN/WAN network operation principles. Must also possess good communications, interpersonal and project management skills.

NBC is seeking leaders who want to contribute and grow with us. We offer a competitive benefits package, plus a great work environment. Please send your resume to **NBC, Attn: C. Simpson, Room C-283, 3000 W. Alameda Ave., Burbank, CA 91523. Fax: (818) 840-3217.** Please, no phone calls! Equal Opportunity Employer.

NBC

Talent is the fuel of the new economy.

Fill up with

IT careers and IT careers.com

Everything exciting in technology today begins with the manufacturing systems and processes Applied Materials has pioneered. The semiconductors that help enable the information age are powered by our innovations. And they are invented, perfected and supported by people like you. If you want to make an impact on all that's happening in the world of technology, it's time to join Applied Materials. We encourage candidates with both BS and MS degrees to apply. We have openings at our Santa Clara, CA site as well as our subsidiaries Applied Komatsu Technology in Santa Clara, CA, ETEC Systems, Inc. in Hayward, CA and Consilium, Inc. in Mountain View, CA and at various locations nationwide for

Customer Engineers
Demo Engineers
Electrical Engineers
Field Process Engineers
Industrial Engineers
Manufacturing Engineers
Mechanical Engineers
Process Engineers
Product Marketing Engineers
Quality Engineers
Reliability Engineers
Software Engineers
Technical Support Engineers
Engineering Managers
Marketing Program Managers
Product Marketing Managers
Program Managers
Project Manager
Technical Ops Managers
Technical Support Managers
Buyers
Bus. Product Dev Analysts
Financial Analysts
Market Analysts
Programmer Analysts
Senior Financial Analysts
User Systems Analysts
Planners
Technical Trainer
Manufacturing Technologists

To apply, please indicate Job Code TIW7731MK and mail to Professional Staffing, Applied Materials, 3050 Bowers Ave MS 1626 Santa Clara, CA 95054 e-mail to staffing@amat.com; or fax to 1-800-656-2629. EEO/AA.

Providence Health System

Making a Difference in Oregon

At Providence Health System, we believe that every employee makes a valuable contribution to the work we do. The Providence Health System provides medical services through a comprehensive network of eight acute care hospitals, Primary Care clinics, a statewide home health service, long term care facilities for children and adults and a managed care insurance plan with over 750,000 members. These operations collectively employ over 12,000 physicians, nurses and other health care providers, administrators and other employees.

A key to the ability to provide integrated information technology for Providence Health System operations throughout the state of Oregon is its Information Services Division. The host, servers and network equipment installed in the Regional Data Center and other areas support over 200 mission critical clinical and business systems. Common Information Systems throughout the state allow us to leverage our service and support. As the second largest private employer in the state, we offer the most advanced technology, competitive salaries and a generous flexible benefits program. Join us - the people we serve deserve the best!

Some of our positions include:

- Analysts
- Project Manager
- Web Developer
- Database Administrator
- Server/Network Engineer
- System Administrator

These and other positions can be viewed on our web site at:

www.providence.org

For consideration, please direct inquiries to: Providence Employment Center, 4805 NE Glisan St., Portland, OR 97213. Fax (503) 216-4652, phone (503) 215-5770 or e-mail to: rhunsaker@providence.org (please reference IT Careers). While the Providence mission will inspire excellence in your career, Portland's easy access to ski resorts, beaches and wilderness trails will invigorate your life outside of work. We are an Affirmative Action Employer in a Culturally Diverse Workplace.

IN OREGON

A caring difference you can feel

Technical Consultant sought by company in Denver, CO specializing in business software solutions to work in Rutherford, NJ & other unanticipated job sites in the US. Under close supervision, engage in moderately complex tasks regarding the post-sales implementation of client/server software applications which run on Windows NT, AS/400, & Unix operating systems, &/or are web-based. Install the software applications & integrate them with legacy applications & relational database management systems, including DB2, SQL/Server, ORACLE, etc. Develop interfaces between new & legacy applications & relational database management systems, & manage the migration of data. Work is closely monitored. Design & develop customizations &/or enhancements to the software applications. De-bug the applications & engage in problem solving & business process re-engineering. Provide user training & support. Use programming language C & proprietary case tools. Requires Bachelor's in computer science, computer engineering, or related field (including electrical & computer engineering); working knowledge of trouble shooting, de-bugging, & providing technical support to UNIX & Windows NT-based software applications (working knowledge may be gained through employment experience or in academic program). 8am-5pm, M-F, $50,000/yr. (2 openings.) Respond by resume to James Shimada, Colorado Department of Labor & Employment, Employment & Training Division, Tower II, #400, 1515 Arapahoe, Denver, CO 80202, & refer to Job Order Number CO4668329.

Sr. Staff Consultant sought by computer software consulting services company in Colorado Springs, CO, to design, develop, test, implement, document, & maintain computer applications which includes applying knowledge of programming techniques & business rules related to the business user's request for new or modified programs. Determine a new system's feasibility, cost, & time required for production, & compatibility with current system & computer capabilities. Consult with users to identify current operating procedures & clarify program objectives. Develop computer code based on design specifications. Perform quality assurance procedures to test the compliance of the system with the business needs of the users. Resolve application performance issues & meet the user's standards using personal computer & mainframe computer programming languages & software. Lead other, less experienced, less educated, Staff Consultants in the software application development process, & assist them with questions regarding business or technical issues. Requires Master's in Computer Science, 2 yrs experience performing the core duties described above, in lieu of Master's in Computer Science & 2 yrs of experience in job offered. Employer will accept Master's in Business Administration, or Management Information Systems, & 2 yrs of experience as a Programmer, or Systems Analyst, or Programmer-Analyst, or Electronic Data Processing Officer, or combination thereof. $28.40/hr, M-F, 8am-5pm. Respond by resume to James Shimada, CO Department of Labor & Employment, Tower II, #400, 1515 Arapahoe St., Denver, CO 80202, & refer to Job Order No. CO4667767.

WE DO A BETTER JOB AT HELPING YOU GET ONE.

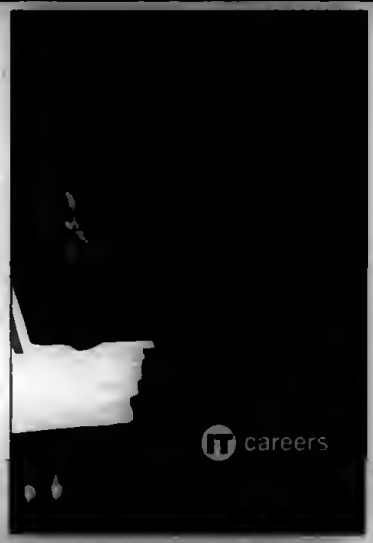
IT careers.com

Sr. Research Engineer sought by image process engineering company in Boulder, CO to, at a senior level, research, design & develop synthetic aperture radar signal processing algorithms including target feature extraction, super resolution image formation & motion compensation (autofocus). Analyze user requirements & project objectives. Code, test & debug the applications. Requires Master's, or foreign degree equivalent, in Computer Science or related field (including Electrical Engineering). 1 yr experience in research, design & development of synthetic aperture radar signal processing algorithms. (May be obtained in an educational or research setting.) $69,700/yr. M-F, 8am-5pm. (3 openings.) Respond by resume to James Shimada, CO Department of Labor & Employment, Tower II, #400, 1515 Arapahoe St., Denver, CO 80202, & refer to Job Order No. CO4667537.

Loudeye seeks S/W Eng Mgr for our Seattle area office. DESC: Manage proj. dev. team leads and developers in full life cycle s/w des. and dev. Determine s/w and h/w arch. Des., dev. and enhance web based e-com. apps to work w/RDBMS, util. Java, C++, and Perl to run on Win O/S. Coord. w/proj. & prod. mgmt. to est. and meet schedules and deadlines and to ensure product meets specs. ad reqs. REQ: Bach. in C.S., Eng., Math or Phys., plus 5 yrs. of exp. in duties in job offered, or 5 yrs. of exp. des. and dev. of RDBMS and various dist. s/w apps. util. object oriented design and prog. meth., C++, Java and WinNT. Also, 2 years project management exp. directing development teams through full life cycle s/w des. & dev. Prem. salaries avail+ bon., benes. DOE. Pls. reply to T. Poole, Job# LET'10, Loudeye, 414 Olive Way, Suite 300, Seattle, WA 98101.

Senior Software Engineer sought by company in Denver, CO specializing in business software solutions to work in Denver & other unanticipated job sites in the US. At a senior level, engage in full life-cycle software development. Specifically, design & develop client/server manufacturing software that incorporates client/server architecture. Analyze requirements. Create designs & design documentation. Code, test & de-bug the software applications. Use proprietary CASE tools, programming languages C & C++ in the design & development process. Mentor other software engineers. Requires Master's degree in computer science or related field (including engineering); working knowledge of designing & developing manufacturing software applications, programming languages C & C++ (working knowledge may be gained through employment experience, or in an academic program). 8am-5pm, M-F, $66,100/yr. (2 openings.) Respond by resume to James Shimada, Colorado Department of Labor & Employment, Employment & Training Division, Tower II, #400, 1515 Arapahoe, Denver, CO 80202, & refer to Job Order Number CO4668325.

Programmer/Analyst sought by company in Denver, CO specializing in business software solutions to work in Denver & other unanticipated job sites in the US. Under close supervision, engage in moderately complex tasks, such as the design & development of client/server software applications, or the tools used to create such applications. The software applications are platform independent, & interface with relational database management systems. Work is closely monitored. Analyze requirements. Create designs & design documentation. Code, test, & de-bug the software applications. Use CASE tools, Java/HTML generator, & programming language C in the design & development process. Requires Bachelor's in computer science or related field (including computer information systems); working knowledge of the design & development of software applications, client/server architecture, relational database management systems, & programming language C (working knowledge may be gained through employment experience or in academic program). 8am-5pm, M-F, $48,000/yr. (2 openings.) Respond by resume to James Shimada, Colorado Department of Labor & Employment, Employment & Training Division, Tower II, #400, 1515 Arapahoe, Denver, CO 80202, & refer to Job Order Number CO 4666337.



ITcareers.com is

the place where your fellow readers are getting a jump on even more of the world's best jobs.

Stop in a visit.

See for yourself.

IT careers.com



Computer/Info Systems

Oracle Applications DBA - Review and provide quality assurance and efficiency on requests going into software code or ad hoc queries. Requires Bachelor's degree and 5+ yrs exp with database technology, knowledge of database administration, data modeling and design.

Director, Enterprise Business Applications - Manage all custom developed and packaged business applications across mainframe, client server and internet platforms. Direct the implementation, development, support and training for applications. Requires Bachelors degree and 8+ yrs experience with Business Applications.

HR/Payroll Functional Analyst - Provide systems administration production support and training sessions for the HR, Payroll, OTM and CTE applications. Requires bachelor's degree and 3-5 yrs HR experience including benefits., HRIS Legacy systems, and Oracle HR/Payroll module.

All positions require knowledge of Canadian & US Labor relations. Please send resume to IMC Global Operations Inc., 2100 Sanders Road Northbrook, IL 60062 Fax 847-412-5829 EOE M/F/D/V

SAP CONFIGURATOR

Cognis Corporation is seeking a SAP Configurator to be based in Cincinnati OH. Candidate will be responsible for ongoing configuration of SAP R/3 Materials Management/Sales/Distribution module implemented at chemical manufacturing company to reflect changes in business process. Req. Bach. deg. in Business, Chemistry or a computer-related field plus SAP R/3 Materials Management module implementation experience. Will consider Bach. deg. or an add. 2 yrs. experience as end-user of SAP R/3 Materials Management module for management of raw materials for chemical manufacturing. Interested candidates should respond to: Cognis Corporation, 5051 Estecreek Drive, Cincinnati OH 45232 Attn: Tiffany King.

Ecommerce CRM Consultants

Where do consultants find solutions for their careers?

Leading Software. Top clients. Remarkable challenges. Welcome to Deloitte & Touche. Working with the very best is what our business is all about. If you've been looking for the opportunity to really put your talent into action, it's time to take a closer look at Deloitte & Touche.

Our Management Solutions and Services Practice offers you greater flexibility in determining the types of consulting projects, industries, and services you can pursue to reach your professional goals. Our CHICAGO OFFICE is currently seeking motivated consultants, at all levels, with experience in Ecommerce - Two+ years Java and/or C++ programming. Java preferred as well as hands on technical experience with some of the following:

Sun Net Dynamics, Netscape Application Server (KIVA), Bluestone, IBM WebSphere and/or Weblogic, Broadvision, Vignette Story Server or Blue Martini, COM/DCOM, Active λ, MTS, Microsoft Site Server commerce edition, Enterprise Java Beans, CORBA, MacroMedia, Javascript, Microsoft IIS.

CRM (Customer Relationship Management) Consultants The technology/product that these consultants will be proficient in is SIEBEL.

Deloitte & Touche is committed to work/life balance, offering a competitive compensation (commensurate w/experience) and comprehensive benefits package. For confidential consideration, send resume to: clandry@dttus.com. Or mail: Deloitte & Touche, 180 N. Stetson Avenue - 20th Floor, Chicago, IL 60601-6779, Attn: Chris Landry.

Visit our website at: www.us.deloitte.com

Deloitte & Touche is an equal opportunity firm. We recruit, employ, train, compensate, and promote without regard to race, religion, creed, color, national origin, age, gender, sexual orientation, marital status, disability, veteran status or any other basis protected by applicable federal, state or local law.

the answer is **Deloitte & Touche**

© 2000 Deloitte & Touche LLP and Deloitte & Touche Consulting Group LLC.
Deloitte & Touche refers to Deloitte & Touche LLP,
Deloitte & Touche Consulting Group and related entities.

Women In Technology ITcareers

Set Your Sights On The World's Best Talent.
Be with ITcareers this year as we continue to partner with Women In Technology on conference coverage and exhibit space.

WITI East Coast Technology Conference
Boston, MA October 11-12

Your advertising in our WITI FASTTRACK Supplements will reach women readers of NetworkWorld, CIO, Computerworld and InfoWorld when their interest in career opportunities is highest.

Find out more
Call your
ITcareers Sales Representative
or Janis Crowley,
1-800-762-2977

Qualified applicants will be notified to join us on **Saturday, August 26th,** when we will be conducting formal interviews and presenting on-the-spot offers to candidates we'd like to join our team.





PROGRAMMER ANALYST/QA ENGINEER
Responsible for design, development/implementation of ORACLE-based software projects, analyzing operational software procedures/requirements identifying/resolving issues concerning modules using full life cycle methodology, regression and integration testing using SQA SUITE SQA ROBOT SQA MANAGER Design develop requirement specification standards for testing procedures and software procedures develop ment of detailed test cases and test scripts for software testing on various platforms to validate benchmark testing identification, analyzation documentation and reparation of bugs encountered during debugging. Design of test case templates and guidelines, installation and setup of automated testing tool SQA SUITE SQA MANAGER SQA ROBOT Responsible for staff training with AUTO TESTER TESTING TOOL Application of client server GUI SQL ORACLE SYBASE VISUAL BASIC Bachelor's degree in Comp Sci or MIS + 2 yrs. exp. in job offered or as software engineer systems analyst or QA engineer M.S. degree + 1 yr. exp. accepted in lieu of Bachelor's degree + 2 yrs. exp. $74,000/yr. 9 a.m. - 5 p.m. Mon-Fri. Apply in person or send two resumes to South Metro, Job Order# GA 8522352, 2635-14 Martin Luther King Dr. Atlanta, GA or nearest Dept. of Labor Field Service Office

CONFIGURATION MANAGEMENT INC
is seeking individuals with experience in any of the following skills:
- ClearCase, PVCS, Sabime, SCCS, CMVC, RCS, TrueChange, Pvcs, Continuus, Perforce, MKS, Endevor, Changeman, Visual SourceSafe
- SEI-CMM Process Improvement, SQA
- UNIX/Shell/Tools/Compilers/makefiles
- C/C++, Perl, RDBMS, SQL
- Optics/Sonet, Switching
- LAN/WAN, TMN, CMIP/CMISE
- Hardware/Software/Firmware Development
- SS7/OSI,DSP/AFX/CDMA/TDMA
- Sales Executives & Technical Recruiters

All positions require strong communication and interpersonal skills. We offer competitive salaries & a full benefits package to all employees. Please forward your resume to our recruiting department: mbarbera@softwareconfiguration.com or fax to (732) 450-0715 attn: M. Barbera.

Senior Consultant. Design develop, implement & test software for management information systems. Participate in Year 2000 Development Program Tools. Mainframe computer COBOL Visual Basic BAAN MS in Comp Sci or Comp Eng + 1 yr exp in job offered or as Programmer/Analyst required. Prev exp must include Mainframe computer COBOL Visual Basic 40hrs/wk. 9am-5pm $60 000/yr Applicants must show proof of legal authority to work in the U.S. Send 2 copies of both resume and cover letter to ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY 401 South State Street - 7 North Chicago, IL 60605 Attn. Leonard Boksa. Reference #V-IL-23275-B. NO CALLS. An Employer Paid Ad.

Career Opportunities with hrsupply.com Atlanta, GA We are seeking bright and industrious staff for positions as Systems Administrators/Developers/Analyst/Programmers (Jr and Sr level) Requirements Master's or Bachelor's Degree in Computer Science or related (or equiv in education & exp) and 1 to 5 yrs. exp in environments including Oracle, Visual Basic, JAVA, MS Access, MS SQL Server PL/SQL, Pro*C C++, Sybase, HTML, ASP I/S Site Server 8.0 CE, CORBA, Crystal Reports Windows NT Windows 95/98 Please fax resume w/ salary req. 404-705-9250 Attn Lynn Howard

System Engineer-Team Leader Perform research and development of new simulation and animation technologies for the telecommunications and networking industry. Communicate with customers of telecommunications network projects to better understand specifications and requirements. Perform research and create strategy for design, optimization and evaluation of projects. Perform research and develop new simulation algorithms and technologies of telecommunications and computer networking industry. Perform consulting service for telecom network integrators. These duties are carried out using Microsoft development platforms, computer network standards, and publications on data networking field. Requirements include: Ph.D. in Computer Science/Applied Mathematics AND one (1) year experience in job offered or one (1) year experience researching advanced simulation for networking technology. Candidate must also possess demonstrated expertise in developing applications using Microsoft Visual C++, MFC and COM demonstrated expertise in design and evaluation of telecommunication network paradigms and projects, and demonstrated expertise developing advanced theoretical algorithms for network simulations. Salary $72,500 per year. Monday to Friday, 9:00 a.m. to 5:00 p.m. Submit two copies of resume to: Case Number 19992511, Labor Exchange Office, 19 Stanford St., 1st Fl. Boston MA 02114 EOE Applicants must be U.S. workers eligible to accept full-time employment in the United States.

Software Engineer- Entails developing a simulation and animation engine for a telecommunications configuration tool. Entails developing the architecture and principal design for all company projects including network collaboration tools such as well as enterprise network design and analyses tools suit. All of these projects are implemented in both Microsoft and Unix environments using the following technologies and tools: Microsoft Visual C++, Symantec Visual Java, Oracle, RDBMS, IBM Visual Age for Java, IBM WebSphere Application Server, BEA WebLogic Application server, Jakarta Web server. Requirements include: B.S. in Computer Science or Mathematics AND two (2) years experience in job offered or two (2) years experience in design and development of distributed application. Candidate must also possess demonstrated expertise developing simulation and animation systems, demonstrated enterprise-class cross-platform distributed systems expertise developing using C++ or JAVA and demonstrated expertise developing telecommunications applications using C++ in Windows environment. Salary $65,000 per year. Monday to Friday, 9:00 a.m. to 5:00 p.m. Submit two copies of resume to Case Number 20000820 Labor Exchange Office, 19 Stanford St., 1st Fl., Boston, MA 02114. EOE Applicants must be U.S. workers eligible to accept full-time employment in the United States.

A 30 year record of quality people like you.

We know you're in demand. So demand the best environment for your growth. IT consulting with an international leader. We've everywhere business and industry are with offices all over the country. So you've always got a new set of challenges, with total support. We're currently recruiting the following professionals: Programmers / Programmer/Analysts / Application Development Specialists / Database Analysts. Business Analysts/ Technical Support Specialists/ Operations Specialists, Network Administrator/ Specialists, Software Engineers and Lead Analyst/Programmers.

Find out more about the rewards of working with Ajilon. To apply for positions in any of our district offices, please see our website at www.ajilon.com. If you're interested in relocation opportunities, don't hesitate to call 1-800-797-2342 or forward your resume to Ajilon, Dept. CW1, 550 American Ave., Suite 301, King of Prussia, PA 19406. Fax 1-800-798-2342. E-mail: natdept@mail.ajilon.com. An equal opportunity employer.

AJILON
www.ajilon.com

Programmer/Systems Analyst
Perform system analysis, design development support testing and implementation of business and commercial application software in mainframe environment using Natural and Adabas languages. Perform fine tuning of applications to decrease response time and minimize memory usage by code optimization and efficient algorithms. Prepare technical documentation, user manuals and instructional manuals as required by end-user. Provide on-site maintenance support to customer on various custom software packages including de-bugging, modifications, fine tuning, and code optimization. Multiple openings 40 hrs/wk., 9:00 am - 5:00 pm, $60,000/yr. B.Sc. in Comp. Sci or Engn. or equiv + 2 yrs. exp in job offered or as programmer analyst or software engineer. M.S. +1 yr exp. accepted in lieu of B.Sc. + 2 yrs. exp. Apply to Spark Technologies Inc. Ref. CWA1. 7001 Peachtree Industrial Blvd. Suite 466 Norcross, GA 30092. Must have legal authority to work permanently in the U.S.

Consultant. Design, develop, implement and test software applications for management information systems. Tools, COBOL; DB2; CICS. M.S. " in Computer Science + 6 months experience in job offered or as a Programmer Analyst required. Previous experience must include: COBOL; DB2; CICS. ("B.S. in Computer Science plus five years progressive experience in software development acceptable in lieu of M.S.) 40 hrs/wk. 9am-5pm. $75,000/yr. Applicants must show proof of legal authority to work permanently in the U.S. Send 2 copies of resume and cover letter to Illinois Department of Employment Security, 401 S. State St.-7 North Chicago, IL 60605. Attn: Joanne Brasus. Ref# V-IL-23156-N. Employer Paid Ad. No calls.

Oracle Web Developer Design, develop, test and implement client server financial applications using tools such as Oracle, Oracle Web server MS SQL Server Develop User interface using Oracle Forms, Oracle Reports, PL/SQL on Windows NT and Unix. Demonstrated ability working with Oracle Applications, PL/SQL. $47,819/yr. 40 hrs/wk. 8 a.m. - 5 p.m. Must have 2 yrs. exp. (or 2 yrs. exp. in related occupation of Programmer Analyst) and B.S. in Comp. Sci., Eng. or related/equiv. Send 2 resumes: Case #20000573, Labor Exchange Office, 19 Stanford Street, 1st Floor, Boston, MA 02114.

Business Systems Analyst-(Canton, MA) Design develop, implement & manage complex marketing systems, databases & applications. Perform data analysis & modeling. Utilize Visual Basic & Windows NT. Masters/Comp Sci, Business, Math or Engg. 1yr/exp. in job offered or 1yr as Prog/Analyst Systems Engineer or Marketing Analyst. Exp. must include knowledge of JAVA, VBA & SQL Server. 40hrs/wk (8 am - 5pm; M - F), $72,438.40/yr. Send resume in dupl. to Case #19993482 Labor Exchange Office, 19 Stanford St. 1st Fl. Boston, MA 02114

Software Engineer Analyst. design, develop, implement and maintain Client Server applications using various databases on multiple environments and platforms. Develop Graphical User Interface and work with RDBMS. Demonstrated ability developing and testing Graphical User Interfaces using tools such as Visual Basic and Visual C++. Demonstrated ability designing, developing and testing client/server applications using COM model. Demonstrated ability working with Relational Data base Management Systems such as MS-Access $76,252/yr. 40 hr/wk. 9 a.m. - 5 p.m. Must have 5 yrs. exp. and B.S. in Comp. Sci., eng. rel. field/equiv. Send 2 resumes. Case #20001633, Labor Exchange Office, 19 Stanford St., 1st Floor, Boston, MA 02114.

IT professionals with a min. of 2 yrs. industry experience in (A) or (B) or (C) or (D) or (E) or (F) or (G) urgently needed. (A) VC++, Visual J++, ATL, WinpcAcsr Entra 300. (B) JavaScript, DHTML, JDBC, Java 1.2 Servlets. (C) VC++, JavaScript, HP-UX, ANSI C++, MFC/ATL, JBuilder/Adevelopper. (D) JavaScript, Delphi, ReportSmith, Lotus Notes 4.0. PS-2-/3-tier Architecture. (E) AS/400, DB2/400, CL/400, RPG/400, IDDU, APLUS, ALDON. (F) Visual Interdev, VJ++, Interest, Clist, Pro-comm, Lead Runner, Kermit. (G) HP UX, HP 9000, Oracle Discoverer, SQL*Loader, Shell Script. (F), HMS/DB, Java SDK, JavaScript, VBScript, Connect Direct, Perl Concepts, Visual Interdev. (G) Chatturvedi OpenROAD 4GL, JBuilder, Perl Scripts, Openingres, ClearCase, Sun JDK. Please send resume & salary reqmts. to HR, Software Technical Services, Inc., 105 Nobel Court, Alpharetta, GA 30005.

Oracle Web Developer Design, develop, test and implement client server financial applications using tools such as Oracle, Oracle Web Server, MS SQL Server. Develop User interface using Oracle Forms, Oracle Reports, PL/SQL on Windows NT and Unix. Work with tools and languages such as CORBA, Java, C, Perl. Demonstrated ability designing, developing, testing and implementing client server applications using Oracle. $76,252/yr. 40 hr/wk. 8 a.m. - 5 p.m. Must have 5 yrs. exp. (or 5 yrs. exp. in related occupation of Programmer Analyst/Software Engineer) and B.S. in Comp. Sci. eng. rel. field/equiv. Send 2 resumes. Case #20000731. Labor Exchange Office, 19 Stanford Street, 1st Floor, Boston, MA 02114.

Oracle Web Developer Design, develop, test and implement client server financial applications using tools such as Oracle, Oracle Web Server, MS SQL Server. Develop User interface using Oracle Forms, Oracle Reports, PL/SQL on Windows NT and UNIX. Demonstrated ability working with Oracle Applications, PL/SQL. $47,819/yr. 40hr/wk. 8a.m. - 5 p.m. Must have 2 yrs. exp. (or 2 yrs. Exp. in related occupation of Programmer Analyst) and B.S. in Comp. Sci., eng. rel. field/equiv. Send 2 resumes: Case #20000672, Labor Exchange Office, 19 Stanford Street, 1st fl., Boston, MA 02114

Computer Database Admin
Manage information system services for benefit database & operations on AS/400 computer, using RPG/400, DB2/400 SQL/400 Query/400, CL/400 Salary & benefits competitive Requires BS in Comp Sci or Math & one yr exper in named job or as sys anal or programmer anal. Exper must include use of stated computers, software & devices. Must have legal auth to work in US. No phone calls. Send resume to Susan Fecht BSSI, 760 Pasquinelli Dr. Suite 320, Westmont, IL 60559-5555

Senior Application Developers
Washington, DC
With experience in design and development of commercial software using OLTP, Designer/Development 2000 Pro*C and C++/UNIX. Send resume to
Shepard-Patterson
ATTN: Jeff Rooton - Code AJ
6810 Deerpath Road, Suite #415
Elkridge, MD 21075

Programmer Analyst. Analyze, implement and test computer programs. Develop Oracle based database systems using Oracle PL/SQL Forms, Reports, Pro*C. Knowledge working with Oracle 7.3, Forms 3.0/4.5, and Reports 2.5. Knowledge programming with Pro*C. $45,000/yr. 40 hr/wk. 9 am - 5 pm. Must have 6 months exp. (or 9 months exp. in related occupation of Project Engineer/Database Administrator) and B.S. in Comp. Sci., Eng. rel. field/equiv. Send 2 resumes. Case #20001633, Labor Exchange Office, 19 Stanford St., 1st Floor, Boston, MA 02114.

Software Engineer Analyst. design, develop, implement and maintain Client Server applications using various databases on multiple environments and platforms. Develop Graphical User Interface and work with RDBMS. Demonstrated ability developing and testing Graphical User Interfaces using tools such as Visual Basic and Visual C++. Demonstrated ability designing, developing and testing client/server applications using COM model. Demonstrated ability working with Relational Data base Management Systems such as MS-Access $76,252/yr. 40 hr/wk. 9 a.m. - 5 p.m. Must have 5 yrs. exp. and B.S. in Comp. Sci., eng. rel. field/equiv. Send 2 resumes. Case #20000468, Labor Exchange Office, 19 Stanford St., 1st Floor, Boston, MA 02114.

SOFTWARE ENGINEER to design, develop, test, implement, maintain and support application software in client/server environments using PowerBuilder Oracle PowerDesigner, Visual Basic, SQL Server and MS Access under Windows NT and Unix operating systems. Require B.S. degree in Computer Science/Engineering, or a closely related field with two years experience in the job offered. Extensive travel on assignments to various client sites within the U.S. is required. Salary $68,000 per year. 8:00 am to 5:00 pm, M-F. Apply by resume to: Shri Gangal, President, Sysprx Technologies, Inc. 3091 Holcomb Bridge Rd., Suite C-2, Norcross, GA 30071. Attn: Job MK.

SOFTWARE
Software development and consulting co. seeks
Software Engineers
All levels with exp. in Java, C++, Windows, QA testing, or Oracle
Resume to RAO Consultants Inc., 1333 Lawrence Expressway #286, Santa Clara, CA 95051 or fax to 408-615-6994

Navision Programmer Needed to join a growing Navision Solution Center. Applicants must have B.S. in MIS or CS with accounting background, or B.S. in accounting with designing and programming experience. Send or fax resumes to
DataHouse Personnel, Suite 100 South One Perimeter Park South, Birmingham, AL 35243 Fax (205) 972-9290

Logica, Inc., is looking for entry-level and experienced candidates to fill the following positions, open at all of our US locations:
- **Software Engineers**
- **Systems Analysts**

Please forward your resume to: Human Resources Department at careers@logica.com OR www.logica.com

Trusted by more hiring managers than any IT site in the world. careers

IT Careers in E-Business

BroadVision
Redwood City, CA

When BroadVision opened its doors in 1993, its mission was to explore and develop e-everything, according to Jim Harrington, the company's vice president for human resources. "We develop a full range of applications that allow you to launch self-service sites and enable personalized transactions with customers, suppliers, partners and employees," he explains.

The company's OnetoOne application powers some of the top e-business sites in financial services, telecommunications, electronics, manufacturing, retail and travel and is sold into 120 countries. "There is no one market," says Harrington. "We develop scaleable applications that enable rapid, cost-effective launches of e-business sites." While only seven years old, BroadVision is ranked among the hottest technology companies in the world by *Business Week* and is listed in that publication's E-Biz 25. Ernst & Young named BroadVision's founder, Dr. Pehong Chen, as entrepreneur of the year, and *Forbes* magazine lists it on the Dynamic 100 roster.

"We need people to help us develop, implement, maintain and redesign a turnkey product for our worldwide customers," says Harrington. Positions open include professional services consultants, product marketing, sales engineers, and vertical market representatives. "The skills range by jobs, but the technical skills needed include Java, C++, HTML, and the ability to conduct rapid development alongside our product marketing group." In addition, the company needs IT professionals for its internal IT group to work on continuous expansion of major ERP systems, web development and business applications. Harrington is recruiting human resources professionals who know and understand the industry and who see individuals as innovators.

BroadVision has established aggressive goals in terms of customers and business, but also concerning the people who work there. These include: creating a high sense of urgency to plan and solve problems; fostering and building teamwork with effective communications; understanding skills and competencies of our peers for better career and customer satisfaction; empowering and being accountable for actions and strategies which can be owned and managed, and being only number one in performance and markets.

"We need people to help us develop, implement, maintain and redesign a turnkey product for our worldwide customers."

Jim Harrington
BroadVision

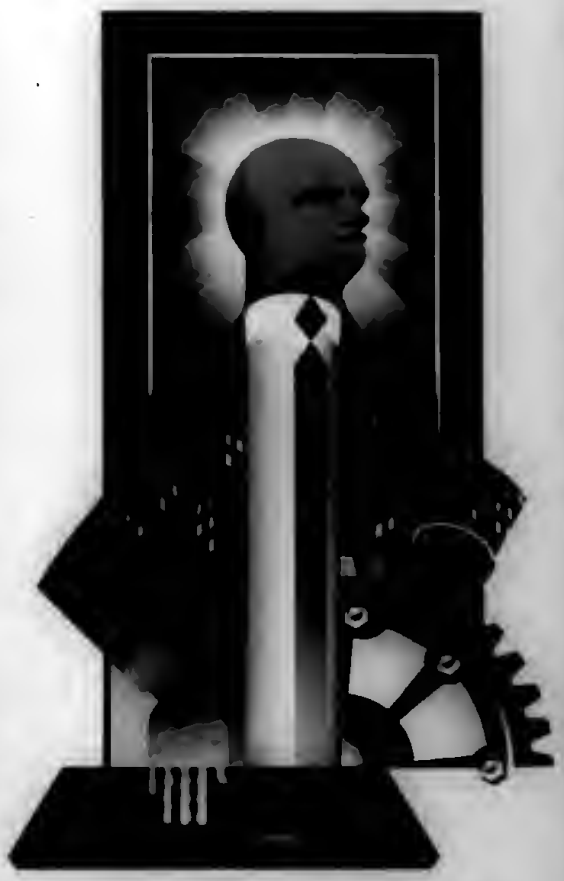
"We have the best-in-class talent in our sector, we offer career opportunities to grow within the company, including individual profiles allowing you to follow your own career map," he says. "Here you can be in the race, competing with the best technologists around with your diverse skills and the broadening vision of what we can do for our customers."

Gartner
Stamford, MA

While Gartner imparts unrivaled strategic consulting to leading companies around the world, its success has been built on expert research into all areas of information technology. Today, Gartner reigns as the world's leading IT research firm and maintains its focus on a simple objective - discern from among the latest and best technologies those that truly enable business success.

Susan O'Connor is recruiting visionaries for the position of research analyst, known internally as thought leaders. "We try to take a global view as to who is doing what and where in the e-world," says O'Connor. "We look at operating companies, vendors and suppliers to identify what the marketplace is doing and what it will be doing."

The firm looks for individuals who are known leaders in their particular technology area and industry. "A research analyst is a senior person who has a complex set of skills and experiences," she explains. "We have many openings throughout our organization, but the research analysts are the people who are on the leading edge and typically have an established reputation, an MBA and a technical undergraduate degree."



In just 12 months, the niche market of e-business has exploded into the e-conomy, a new economy that uses the Internet to move materials and cash at lightning speed. As most companies acknowledge, e-business careers today involve much more than just a set of complex, advanced technology skills. Instead, e-conomy careers are those dominating the landscape of the future, combining advanced technological know-how with in-depth knowledge of business strategy and the functions required to support business operations.

IT Careers in E-Business

While Gartner invites just one in 800 applicants for interviews for the coveted thought leaders slots, there is no shortage of applicants. "Gartner's brand is so strong, and these individuals are truly regarded as industry leaders," she says. "We understand that these types of people are heavily sought after and that many will go on to lead other companies. But the knowledge and network of associates that people build at Gartner is unmatched, and our strong alumni program is designed so that people can continue to benefit from their Gartner experience, no matter where they have moved on to."

In addition to the reputation-building experience, Gartner allows thought leaders to work from their current locations, with minimal relocation.

Kaiser Permanente Information Technology Oakland, CA

As with most corporations or institutions, Kaiser Permanente has no single answer as to its approach for e-business. "It's a broad term," says Michelle Wright, application manager for supply chain systems. "It involves e-procurement and moving functions throughout the organization to Internet-based operations."

As America's largest not-for-profit health maintenance organization, KP has an IT group made up of more than 5,000 IT professionals. Revenues for the healthcare system were $15 billion in 1999, and KP currently employs 90,000. Projects include a variety of application implementations, designed to better link KP to its providers and groups served. KPOnline serves as a portal between Kaiser Permanent and more than eight million members. "These types of projects are helping our healthcare organization move out into the member and provider community," says Wright. The projects are linking through several existing legacy systems, the basis of a unique retraining effort under way. Wright describes an approach being used to bring legacy IT employees up to speed with the e-business world. "We partner a current employee who has mainframe skills with a new employee. They share knowledge about legacy systems and about new technologies," she explains. "The result is that we can develop two employees, not just bring in a single set of new skills."

"There is massive data related to customer relationship management, database marketing and supply chain management. Businesses are moving from using technology to understand not only the transaction side but to also understand the movement and psychology of their customers and partners."

Tim McBreen
Knightsbridge Solutions



KPIT is hiring individuals with object-oriented design, HTML, large-scale implementation and strong analytical skills. "We need people who communicate well, who can scale along with us and who can work in a large and diverse organization," says Wright.

"There's a lot of opportunity here because as an IT organization, we really are equal to a large IT company. Ongoing learning and education are the cornerstones of a medical/healthcare institution. You'll have the ability to move among diverse projects and to build skills. Plus, we're rated by *Fortune* magazine as one of the Top 100 Places to Work for in America."

Knightsbridge Solutions Chicago, IL

Any business conducting business over the Internet realizes one key issue quickly - huge amounts of data must be managed to measure the health of the business and attract and keep online business partners and customers. That's the kind of "big data" problem that Knightsbridge Solutions solves through high-performance data warehousing and e-infrastructure solutions. Founded in 1994, Knightsbridge offers systems integration services focused on implementing terabyte-class data solutions.

"There is massive data related to customer relationship management, database marketing and supply chain management," explains Tim McBreen, senior principal and e-business practice leader. "Businesses are moving from using technology to understand not only the transaction side but to also understand the movement and psychology of their customers and partners."

Knightsbridge's approach relies on scalable and parallel technologies to achieve massive throughput against high data volumes generated in the e-business environment and from existing operational sources. "In the future we'll see true global e-enterprises that will differentiate based on their ability to effectively leverage both their own data as well as external partner data," says McBreen.

In an example, McBreen points to a major dot-com served by Knightsbridge. "Our system provides the ability to handle 1.5 billion clicks a day, plus feed analytic and billing systems. The company is now six to 18 months ahead of its competitors – and they have the built-in scalability to handle 10 billion clicks a day without additional change," he explains.

Trudy Norman, recruiting manager for Knightsbridge, says the company is looking for IT professionals with expertise in vertical markets that include banking, healthcare, insurance, manufacturing, dot-com, and telecommunications. "We need people with data warehousing experience and a minimum of three years experience in full life-cycle support," says Norman. The firm seeks individuals with skills in data architecture, database design, data modeling, large relational databases, and parallel technologies.

"The technical challenge we can solve is significant and that's appealing to candidates," says Norman. "We're also a pre-IPO company and growing dramatically, which offers excellent opportunities for those with the talent and drive to succeed."

IT Careers in E-Business



Open Text
Waterloo, Ontario, Canada

Anik Ganguly, executive vice president-product management for Open Text, describes the software products the company produces as collaborative commerce applications. "We develop off-the-shelf software used by Fortune 1000 and global companies," says Ganguly. "Our focus is on the ability to share information quickly, create projects and collaborate on and reuse strategies and business documents among geographically dispersed employees, customers, suppliers and vendors."

Open Text's core product, Livelink, can work over the Internet or within Intranets. "For instance, if 15 different firms were networking together to bid on building an oil rig, Livelink would help coordinate the creation and collaboration on the design and transaction documents to support the bid process," Ganguly explains.

Open Text was incorporated in 1991 as an outgrowth of a research project started in 1985 at the University of Waterloo. The company went public on the Nasdaq in 1996 and on the TSE in 1998. "We believe that over the next three years, the principle thrust in e-business will be to help customers harness the Internet to allow multiple corporations to collaborate. Using the technology we provide, they will be able to improve processes and speed new product development," Ganguly predicts.

Ganguly says Open Text is an appealing place to work not just for the technology, but also for the customer base that includes companies such as Siemens, Chase Manhattan, the U.S. Air Force Procurement Command, Nortel Networks and Motorola. "We act on ideas and have a strong customer base to test these ideas with," he says. "We have very little ivory tower attitude and a strong sense of where we're going. The technical challenge is impressive as we work with devices, wireless technologies, a variety of languages and operating systems to exploit technology and allow customers to build on previous information technology investments."

Open Text is seeking IT professionals who have commercial software development experience and who understand the complexities of creating shrink-wrapped software that will work for thousands of customers, as well as software engineers. The company expects to grow by 50 percent in 2000, primarily at its seven development sites located throughout Canada and the United States.

PricewaterhouseCoopers
New York, NY

In the minds of PricewaterhouseCoopers employees, the new e-conomy is all about leveraging the web in everything you do. "Our business is helping clients achieve leadership and competitive advantage," explains Jeanie Mabie, Americas recruitment leader for the Management Consulting Services Practice. "The key is in understanding the new economy and tapping the power of the web to achieve success for our clients."

"The best reason to join PricewaterhouseCoopers is the opportunity to experience all of this first-hand, to work in the e-business revolution and to do it alongside other talented consultants you enjoy working with."

Jeanie Mabie
PriceWaterhouseCoopers

In the past, it was smaller players who captured the business-to-consumer marketplace. Now, PricewaterhouseCoopers is helping small and large companies adjust to a much more complex generation of technology that links business-to-business, business-to-employee and every variation in between. "Our consultants are looking at everything from strategy to process to design and integration of back-end systems and newly developed applications. We must move fast and have reorganized ourselves to be agile," says Mabie.

Among the significant aspects of reinventing the big consulting firm is the creation of incubators where employees can gain experience launching all new businesses. "We're hiring people in all different areas," says Mabie. "We are very hot on strategists, people who really understand the implications of what is happening and the impact technology has on changing business.

"Within the technology area, the hottest skills needed are people who have experience with e-business tools in the hot products. We look for people who have worked in consulting, at dot-coms, and for those who have done e-business work in the industry."

Mabie says one of the significant draws for PricewaterhouseCoopers in hiring is training and education. "It's been a key strength for us for years," she says. "We offer online convergence between training and knowledge management, plus 10 weeks of technical training in e-business concepts and technologies for entry-level hires and training in new e-business technologies for those with prior experience." PwC recently opened its Global Learning and Professional Development Center in Tampa to add to its educational program.

"We're able to offer a lot of opportunities so every individual's career and experience with PricewaterhouseCoopers will vary," says Mabie. "Our consultants are able to transform multiple companies or entire industries. We've been a leader in creating online market exchanges (about 70 thus far), and we've formed an incubator to incubate new business ideas from our staff as well as from clients.

"The best reason to join PricewaterhouseCoopers is the opportunity to experience all of this first-hand, to work in the e-business revolution and to do it alongside other talented consultants you enjoy working with."

For more job opportunities in E-Business, turn to the pages of IT Careers.

If you'd like to take part in an upcoming IT Careers feature, contact Janis Crowley, 650.312.0607 or janis_crowley@itcareers.net.

Produced by Carole R. Hedden
Designed by Aldebaran Graphic Solutions

IT Careers in the Pacific Northwest



Avenue A
Seattle, WA

As Internet-based businesses explode, Avenue A has carved out a niche as an expert in direct marketing analysis, knowing who's clicking, when and why. In operation since January 1998, the company has 500 employees worldwide and went public four months ago.

"We are looking for people who have a marketing background and have analytical skills," says Michella Murray-Minamide, corporate recruiting manager. "These are client-oriented positions that combine data analysis with gut, street smarts."

Avenue A is a Microsoft shop that then develops its own proprietary software and tools to fully mine data, according to technical recruiter Regan Cowan. "The tools we develop track click rates and click through, then automate feedback so we can review the data, which allows us to develop campaigns thet increase the return on investment for our customers."

To develop these tools, Avenue A is looking for people with experience in web development, system architecture and database tools. "We're looking for people who have used these technologies in previous work, from those working a help desk who want to take a next step to those who have advanced training in database mining." Specific skills needed include database engineering, web development and the skill to roll out Beta programs.

While Avenue A isn't a straight-line technology company, it offers candidates a diverse work place that uses technology to turn a huge amount of information into knowledge. "Our projects are well thought and creative. As the industry continues to evolve, the demand for our work will grow at e-speed," says Murray-Minamide Cowan adds that the 500-people young company offers another opportunity. "Your work makes a difference here. You can point at things and say I did that."

Credence Systems
Hillsboro, OR/Fremont, CA

While developing software applications may grab tha headlines, the complexities of developing the tools that test the tiny circuits and chips that drive information technology is the beachhead for Credence Systems.

David O'Brien, senior vice president and CIO, says Credence Systems makes automatic test equipment used in the manufacturing of semi-conductors. "Its complexity is driven by the combination of electronic circuitry, software and mechanical/hardware design," says O'Brien. The company has two primary facilities in Fremont, CA and Hillsboro, OR, with engineering, marketing and service positions at both sites. "It's a great area – the quality of life, the reasonable cost of living and the opportunities that exist with all the companies in the Northwest. The proximity to the high tech energy of Silicon Valley is a real plus."

The test tools built by Credence are powered by NT and Solaris architecture, integrated circuitry and software. "It's high speed electrical design at its best," adds O'Brien. "Our customers use it for every device they manufactura. Quality, reliability and test tima are critical"

In addition to the product development work availabla at Credence, tha company also has IT positions open for those with skills to support the business operation – e-business, ERP, supply chain management, financial managemant and customer relationship management. "We undertook rapid implementation of ERP and CRM systems in 1999 and extended the virtual campus through developments in design collaboration," O'Brien says. "We're integrating, developing and web-enabling multiple systems."

In addition to the great surroundings, O'Brien says Credence Systems offers more environmental pluses. "We've got a great group of people to work with, and we've found that liking the peopla you work with and being comfortabla and challanged by them is really important. We're tripling the size of this company in one fiscal year, so we all have to pull in the same direction at the sama tima. You'll be technically challenged to hone current skills and acquire new ones, and if you're looking to maka a mark, this is a placa where you can do it."

Drugstore.com
Bellevue, WA

In the shakeout of dot-com success, Drugstore.com is building a reputation for pushing forward and performing. "We are a retail company that built its own technology platform. We did this by attracting smart peopla with a passion for technology," says Tracy Duncan, senior technical recruiter. "Over the past year, we've exceeded our goals set in sales and customer acquisition and retention. We have been successful in growing this business. We're no longar considered small or a start-up, but a leader in tha retail dot-com space."

The company is thriving dua to solid alliances and acquisitions, says Duncan. "We have acquired Beauty.com to provide a prestige line, and we wera the first company to own a tab on Amazon.com's website. During the next 18 months, the company will focus on growing the pharmacy business (a strong base for repeat customers), improving operational costs and planning for a successful holiday season. It's very important that we're part of the holiday online shopping buzz.

"To maka all this possibla, we need to hira very smart, passionate people. We've set the bar very high and won't compromise," says Duncan. "Our emphasis is on data warehouse developers, web development, C++ coders and peopla who are creative. There is currently a search going on for a group manager to lead our Oracla DBA taam. We're a on version 2 of our website and must continue its evolution."

In evaluating potential candidates, Duncan looks for drive, passion and intelligence as much as actual work experience. "When it comes to experience, we're interested in how you specifically impacted a project and evidence of ongoing learning. Learning is part of every day here. We must know the bandwidth for learning is there when we hire," Duncan adds.

"Peopla come to Drugstore.com because they believe in the business model, ara smart and want to be around others who are lika them. They also come for the challenges and creative environment. But it doesn't hurt that our work environment is also casual, fast moving, high-energy and down right fun! It has to be, because when you're a leader, your daily focus is on how to stay a step or two ahead of the competition."

Intel
Santa Clara, CA

In the land of computing, Intel is the giant, bringing new fabricating facilities up to operation quickly and pumping out the new products that are the engine of the industry. But buried deep within the company are some of the most intriguing technical challenges around – creating the e-business network that will allow the company to continue to be the successful industry leader they are.

Tina Evangelista, corporate business sourcing management, says tha company is looking for high talant IT professionals to work the front and back end of technology. "We have opportunities in network connectivity, web tool development, e-business, and those who have worked with SAP, PeopleSoft and UNIX. In addition, we need software engineers for our internal business operations, but also to work on low-level software development," she says.

The primary criteria she looks for are appropriate technical degrees, experience and a lack of job-hopping. "We look at the technical perspective and a person's problem-solving capabilities," says Evangelista. "As with most of this industry, you need to be able to deal with ambiguity and to work on teams with co-workers and customers."

Evangelista says the company offers challenges through its use of technology, through new products and through acquisitions. "We work with you to develop a career plan that addresses what you want this year, but also what you want five years from now. We want you to own your own employability.

"In return you'll work for a proven world leader alongside bright and successful people. Every day will be different. If you have an idea for business, you can present it to our new business investment team – extending your ability to be creative. While we are located worldwide, we have a strong presence in Beaverton and Hillsboro (OR) and Dupont (WA)."

For more job opportunities in the Pacific Northwest, turn to the pages of IT Careers.
If you'd like to take part in an upcoming IT Careers feature, contact Janis Crowley, 650.312.0607 or janis_crowley@itcareers.net.
Produced by Carole R. Hadden • Designed by Aldebaran Graphic Solutions

PERCENT	
Auspex Systems	28.8
Call-Net Enterprises	15.4
3Com Corp.	13.4
Adaptec Inc.	12.1
Baan Co. N.V.	10.9
Affiliated Computer Servs	8.8
Avid Technology	8.4
Comsat Corp.	6.3

PERCENT	
Am. Power Conversion (H)	-68.1
Maxtor Corp.	-44.4
Network Computing Dev	-43.1
Priceline.com Inc. (L)	-40.7
LSI Logic	-30.4
Verilink	-29.1
Red Hat Inc.	-28.2
Documentum	-27.7

DOLLAR	
Affiliated Computer Servs	2.75
Adaptec Inc.	2.69
Tellabs Inc.	2.13
3Com Corp.	1.88
Comsat Corp.	1.58
Auspex Systems	1.24
Fiserv (H)	0.88
Avid Technology	0.88

DOLLAR	
Juniper Networks Inc.	-39.69
American Power Conversion (H)	-21.88
Adobe Systems Inc.	-20.31
Active Software	-20.00
Tibco Software Inc.	-18.91
Informatica Corp.	-18.75
Network Appliance Inc.	-17.88
Altera	-17.72

Corning Succeeding With Telecom Push

Analysts say no signs of slowing fiber-optic market

BY PIMM FOX

CORNING INC.'S stock performance clearly illustrates the success of its transformation into the world's largest optical-fiber producer.

Corning [NYSE:GLW], which enjoys twice the market share of second-place Luceot Technologies Inc. [NYSE:LU] in Murray Hill, N.J., closed at $283.75 on July 21, an increase of 120% so far this year.

Christopher J. Crespi, who covers the Corning, N.Y.-based company at Banc of America Securities LLC in San Francisco, recommends Corning "as a core holding in optical networking."

Crespi says that "Corning has clearly demonstrated its ability to significantly grow top- and bottom-line performance by meeting the demands of the growing markets for optical fiber, optical components and LCD displays."

But it wasn't always this way. Roger G. Ackerman, who took over as chairman and CEO of Corning in 1995, transformed its unwieldy collection of businesses into a telecommunications powerhouse. Last year, telecommunications brought in 59% of Corning's revenue. The advanced-materials division contributed 25%, and information displays accounted for 16%.

According to Charlie Willhoit, an analyst at J. P. Morgan Securities Inc. in New York, "Corning's three core businesses — optical fiber, optical components and LCDs — are generating high-growth, highly visible revenue and profits that show no real signs of abating."

But can Corning keep it up? Worldwide demand for optical fiber increased 35% last year to more than 43 million fiber miles, and the overall market grew 40% in the second quarter.

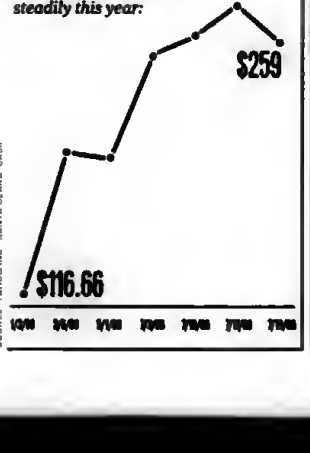
But some analysts say the next event investors should be watching for is an acquisition. The announced merger of JDS Uniphase Corp. [Nasdaq:JDSU] and SDL Inc. [Nasdaq:SDLI], both in San Jose, will heighten competition in the optical components space. Corning had discussed a merger with SDL, and although that avenue is now closed, the company intends to grow through internal growth and by acquisition.

Corning was discussing a deal with Nortel Networks Corp. [NYSE:NT] in Brampton, Ontario, but announced last week that talks had collapsed. ▶

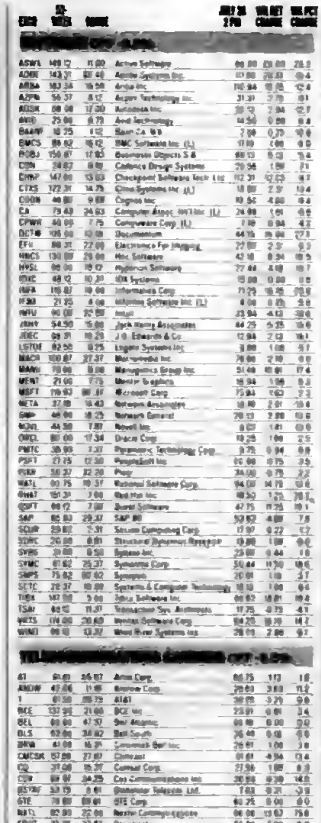
INDUSTRY ALMANAC

Corning's Advance

Corning's stock price has risen steadily this year:



SOURCE: YAHOO! INC., SANTA CLARA, CALIF.





KEY: **(H)** = New annual high reached in period
(L) = New annual low reached in period

Copyright CNET Investor, Boulder, Colo. (*www.news.com/investor*) This information is based on sources believed to be reliable, and though extensive efforts are made to assure its accuracy, no guarantees can be made. CNET Investor and *Computerworld* assume no liability for inaccuracies. For information on CNET's customized financial research services, call (303) 938-1877.

How to Contact Computerworld

TELEPHONE/FAX

Main phone number (508) 879-0700
All editors unless otherwise noted below
Main fax number (508) 875-8931
24-hour news tip line (508) 820-8555

E-MAIL

Our Web address is **www.computerworld.com.** All staff members can be reached via e-mail on the Internet using the form: **firstname_lastname@computerworld.com.**

All IDG News Service correspondents can be reached using the form: **firstname_lastname@idg.com.**

LETTERS TO THE EDITOR

Letters to the editor are welcome and should be sent to: **letters@computerworld.com.** *Include your address and telephone number.*

MAIL ADDRESS

PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701

SUBSCRIPTIONS/BACK ISSUES

Subscription rates: U.S., $58/year; Canada, $110/year; Central and South America, $250/year; all others, $295/year

Phone (800) 552-4431
E-mail circulation@computerworld.com
Back issues (508) 820-8167

REPRINTS/PERMISSIONS

Phone Ray Trynovich (717) 399-1900, ext. 124
E-mail rtry@rmsreprints.com

CONTACTING CW EDITORS

We invite readers to call or write with their comments and ideas. It is best to submit ideas to one of the department editors and the appropriate beat reporter.

Editor in Chief MaryAnn Johnson (508) 820-8179
Editorial Director, Print/Online Patricia Keefe (508) 820-8183

DEPARTMENT EDITORS

News Editors Anne McCrory (508) 820-8205
Assistant News Editor Dan Tennant (508) 620 7714
Business Editor Kevin Fogarty (508) 820-8246
Assistant Business Editor Melissa Solomon (508) 620 7754
Technology Editor Robert L. Scheier (508) 820-8226
Assistant Technology Editor Tommy Peterson (508) 620-7729
Washington Bureau Chief Mitch Betts (202) 347-6718
West Coast Bureau Chief Pimm Fox (650) 524 7116
West Coast Editor Mark Hall (503) 391 1158

REPORTERS

Mobile computing/wireless, internetworking, telecom/wireless, defense and aerospace Bob Brewin (301) 277-8069
Application development, Java, automotive James Cope (219) 273-5369
Careers, labor issues, outsourcing, application service providers, health care Julekha Dash (604) 295-9512
Microsoft operating systems, BackOffice, Novell, food processors/suppliers Dominique Deckmyn (650) 524 7112
General assignment, e-mail, groupware Jennifer DiSabatino (508) 820-8122
Security, encryption, viruses Ann Harrison (650) 524 7117
Business-to-business e-commerce Julia Kang (610) 532 7599
Network, systems management, food, retail and restaurant Sami Lais (301) 270-1427
General assignment, travel Michael Meehan (508) 620-7704
General assignment, storage Kathleen Ohlson (508) 820-8265
Business-to-consumer e-commerce and technologies, retailers Carol Sliwa (508) 628-4731
General assignment, transportation/carriers Linda Rosencrance (508) 628-4734
State/federal government, antitrust, legal issues, politics Patrick Thibodeau (202) 333-2448
IT management, financial services Maria Trombly (413) 323-0842
Large systems/high-end Web server technology, security, heavy manufacturing Jaikumar Vijayan (508) 820-8220
General assignment Todd Weiss (717) 560-5256

OPINIONS

Staff Columnist Frank Hayes (503) 252-0100
Columns Editor Rick Saia (508) 820-8118

FEATURE EDITORS

Special Projects Editor Ellen Finnung (508) 620-8204
Business Feature Editor Thomas Hoffman (914) 966-9630
Reviews Russell Kay (508) 820-8175
Technology Evaluations Editor Robert L. Mitchell (508) 820-8177
IT Management Rick Saia (508) 820-8118
IT Careers David B. Weldon (508) 820-8166

FEATURE WRITERS

Gary H. Anthes (202) 347-0134
Matt Hamblen (508) 820-8567
Kathleen Melymuka (508) 628-4831
Kim S. Nash (773) 275-4133
Matthew Schwartz (508) 820-8265
Deborah Radcliff (707) 829-5823

RESEARCH

Lorraine Cosgrove Ware, **research director;** Mari Keefe, **editorial research specialist;** Lisa Sydney, **online researcher;** Allison Wright, **editorial research assistant**

COPY DESK

Jamie Eckle, **managing editor/production** (508) 820-8202
Jean Consalvo, **assistant managing editor/production;** Michele Lee, Bob Rawson, **senior copy editors;** Jacqueline Day, Eugene Demaitre, Linda Frank, Mike Parent, **copy editors**

GRAPHIC DESIGN

Tom Monahan, **design director** (508) 820-8216; Stephanie Faucher, **art director/features;** Mitchell J. Hayes, **art director/news;** John R. Brillon, April O'Connor, David Waugh, **associate art directors;** Julie D'Errico, **graphic designer;** Joy Park, **editorial graphics coordinator;** Rich Tennant, John Klossner, **cartoonists**

ADMINISTRATIVE SUPPORT

Linda Gorgone, **office manager** (ext. 8176); Cosmie Brown (ext. 8178), Lorraine Witzell (ext. 8139), Gussie Wilson (650) 524 7035, **editorial assistants**

COMPUTERWORLD ONLINE

Tom Monahan, **director, online and design** (508) 820-8216; Sharon Machlis, **managing editor/online** (508) 820-8231; Craig Stedman, **online news editor** (508) 820-8120; Marian Prokop, **online news editor** (508) 620-7717; Brian Sullivan, **communities page editor** (508) 620-7760; Peter Smith, **Web development manager;** David Ramel, **online production coordinator and e-mail newsletter editor;** William Rigby, **online services manager**

CONTRIBUTING COLUMNISTS

Allan E. Alter, Joe Auer, Jim Champy, John Gantz, Dan Gillmor, Peter G. W. Keen, Bill Laberis, David Moschella, Fran Quittel, Paul A. Strassmann, Don Tapscott, Ed Yourdon

CONTRIBUTING WRITERS

Leslie Goff, Amy Helen Johnson

COMPANIES IN THIS ISSUE

Page number refers to page on which story begins. Company names can also be searched at **www.computerworld.com**

3COM CORP 38
3M CO 53
ABERDEEN GROUP INC 20
ACCESS MARKETS
ACTERNA INTERNATIONAL PARTNERS 6
ACXIOM 4
ADAMA TECHNOLOGIES INC 52 60
ADELPHIA CORP 16
ADELPHIA COMMUNICATIONS CORP 16
ADVANCED MICRO DEVICES INC 6
AETNA INC 16
AETNA U.S. HEALTHCARE 16
AFFILIATED COMPUTER SERVICES INC 16
AGILENT TECHNOLOGIES INC 6
AIRBORNE EXPRESS 16
AIRTOUCH COMMUNICATIONS INC 16
ALCATEL 16
ALCOA INC 16
ALLEGHENY TECHNOLOGIES INC 16
ALLIANCE CAPITAL MANAGEMENT 16
ALLSTATE INSURANCE CO 4
ALLTEL CORP 16
AMAZON.COM INC 16
AMERICA ONLINE INC 1 16 38
AMERICAN AIRLINES INC 16
AMERICAN BANKERS ASSOCIATION 16
AMERICAN EXPRESS CO 38
AMERICAN MANAGEMENT SYSTEMS INC 17
AMR RESEARCH INC 16
ANDERSEN CONSULTING 17
APPLIED MANAGEMENT TECHNOLOGIES 54
ARC ADVISORY GROUP INC 38
ARIBA INC 6 8
ARRIS INC 16
ART TECHNOLOGY GROUP INC 16
AT&T CORP 16 46
AUTODESK INC 47
AVENT TECHNOLOGIES INC 6
BAAN CO 21
BACKWEB TECHNOLOGIES INC 54
BANC OF AMERICA SECURITIES LLC 75
BANK OF AMERICA CORP 21
BEA SYSTEMS INC 60
BELL & HOWELL CO 16
BELL ATLANTIC CORP 16
BELL CANADA INTERNATIONAL INC 16
BELLSOUTH CORP CO 38 47
BEST BUY CO INC 47
BIG BUY COM 47
BIG GROUP PLC 60
BIGDISKBUILD.COM INC 38
BLUE CROSS BLUE SHIELD OF TENNESSEE 16
BMC SOFTWARE INC 4
BOOKSHOP.COM INC 60
BP AMOCO PLC 6
BROADVISION INC 43 52
BUDGET RENT A CAR CORP 38
CACI INTERNATIONAL INC 54
CADENCE DESIGN SYSTEMS INC 16
CADILLAC TECHNOLOGY CORP 38
CAMMED INTERNATIONAL GROUP 52
CAMBRIDGE TECHNOLOGY PARTNERS INC 26
CAP VENTURES INC 20
CARNEGIE MELLON UNIVERSITY 8 Jo 49
CDNOW INC 6
CELLULAR TELEPHONE INDUSTRY ASSOCIATION 1
CENTOCOR INC 52
CHARLES SCHWAB & CO 1
CIRCLES 38
CISCO SYSTEMS INC 38 46 38
CMGI INC 60
COLLABNET 20
COMMERCE ONE INC 6
COMPAQ COMPUTER CORP 6 12 21 60
COMPUTER ASSOCIATES INTERNATIONAL INC 1 38
COMPUWARE CORP 1 54
CONEXANT INC 44
CONNECTIV CORP 38
CORNELL CORP 38
CREDENCE INC 75
CONSENT 6 38
CYBERSOURCE CORP 31
D H BRITAIN ASSOCIATES INC 38
DAIMLERCHRYSLER 60 6 38
DATAQUEST 24
DCP INC 38
DELL COMPUTER CORP 26 38 60
DELTA AIR LINES INC 1 26 31
DEUTSCHE TELEKOM AG 21
DIGITAL RESEARCH INC 6
DIGITAL SIGNATURE TRUST CO 21
DORSEY & WHITNEY LLP 17
DR PEPPER/SEVEN UP INC 44
DR 3SS GMBH INC 60
EBAY INC 21
EMC CORP 54
ENTERPRISE APPLICATION CONSULTING 38
ENTERPRISE MANAGEMENT ASSOCIATES 54
EPYLON CORP 17
ETRADE GROUP INC 4 52
EVERAD INC 4
EXCITE@HOME 16
EXODUS COMMUNICATIONS INC 60
EXXON MOBIL CORP 6
FS NETWORKS INC 38
FAIRPOINT GROUP 46
FEDERAL COMMUNICATIONS COMMISSION 14 16
FEDERAL EXPRESS CORP 6 26 38
FIELD GROUP 17
FIDELITY INVESTMENTS 38
FILENET CORP 54
FIRSTHP INC 38
FORD MOTOR CO 6 38
FORRESTER RESEARCH INC 1 6 16 31 37 38 46 60
FOUNDRY NETWORKS INC 54
FRANCE TELECOM 21
FRITO LAY INC 26
GALILEO INTERNATIONAL INC 1 16
GARTNER GROUP INC 1 21 38 47 52
GAZELLE COM INC 38
GEICO CORP 4
GENERAL MOTORS CORP 6 38 60
GETTHERE INC 16
GISA INFORMATION GROUP INC 6 12 20 21 44 54
GNUTELLA.COM 4
GOMEZ ADVISORS INC 31
GORDON & GLICKSON LLP 6 38
GREENFOUNDRIES INC 1
GWCOM INC 38
HAY GROUP 62
HEALTHSTREAM MANAGEMENT GROUP INC 1
HERZOG HEINE AND GEDULD 6
HEWLETT PACKARD CO 54 55 56
HURWITZ GROUP INC 1
IBM 1 6 10 12 16 21 38 39 47 54
ICAST CORP 16
IDABORO INC 38
ILLUMINATE INC 44 54
IMMEDIENT CORP 38
INDIANAPOLIS POWER & LIGHT CO 20
INTEL CORP 6 24 54
INTERNATIONAL DATA GROUP 4 15 21 44 52 54
INTERNET CORPORATION FOR ASSIGNED NAMES AND NUMBERS 34
INTERNET ENGINEERING TASK FORCE 15
INVENSYS PLC 21
IP MEDIA INC 60
ISOCHRON DATA CORP 44
J.D. EDWARDS & CO 38
J.P. MORGAN SECURITIES INC 75
JDS UNIPHASE CORP 26
JOHNS HOPKINS UNIVERSITY 44
JUNIPER FINANCIAL CORP 16
JUPITER COMMUNICATIONS INC 60
KEIKUS COM LLC 6
KEYCORP 49
KEYNOTE SYSTEMS INC 38
KMART CORP 1
LIBERTY MUTUAL INSURANCE COM 38
LIVING COM INC 16
LOCKHEED MARTIN CORP 17
LOTUS DEVELOPMENT CORP 1 69
LUCENT TECHNOLOGIES INC 1 69 58 26
MACROMEDIA INC 38
MACYS COM INC 6
MAIL BOXES ETC. USA INC 16
MAINESMANN 60 24
MARCH FIRST INC 38
MARIMBA INC 16
MARTEL INTERNATIONAL INC 1
MERCATA INC 16
MERCK & CO 38
META GROUP INC 16
METAHOST INC 1
METAL SPECTRUM 6 38
METRO GOLDWYN MAYER STUDIOS INC 38
MICROSOFT CORP 4 12 15 17 20 21 24 54 57 58
MINDSPRING COM 6
MOBILE INSIGHTS INC 60
MOORE CORP 38
MOTION PICTURE ASSOCIATION OF AMERICA 49
MOTOROLA INC 44
MSC INDUSTRIAL DIRECT CO 6
MYDIAMONDBUY COM 6
NAPRADOR COM 49
NAPSTER INC 49
NATIONAL ASSOCIATION OF SECURITIES DEALERS INC 49
NATIONAL INTERBANK 16
NATIONAL RETAIL FEDERATION 1
NAVISITE INC 60
NCR CORP 1
NETEP TECHNOLOGIES INC 49
NETVISION INC 38
NETWORK SOLUTIONS INC 24
NEW YORK STOCK EXCHANGE 6
NEXTEL COMMUNICATIONS INC 60
NEXUS CORP 47
NORTEL NETWORKS CORP 58 75
NORTHWEST AIRLINES INC 1 16 31
NOVELL INC 20 37
NOWDOCS COM INC 38
ODEO INC 16
OPEN MARKET INC 38
OPTIMAL NETWORKS CORP 54
ORACLE CORP 6 12 20 60 62
ORANGE PLC 21
ORT LIFE INC 53
PACIFIC COAST BUY.COM PRODUCTS 38
PAL 16 INC 10 34 46
PASSLOGIX INC 38
PATRICIA SEYBOLD GROUP 8
PATRIOT COMPUTER CORP 6
PENCOM SYSTEMS INC 60
PEROT SYSTEMS CORP 34
PETSMART COM INC 6 34
PHOCUSWRIGHT INC 1
PHONE COM INC 16
PLANT WIDE RESEARCH GROUP 16
PRICEWATERHOUSECOOPERS 16
PRODIGY SERVICES CORP 16
PROVICOM INC 38
QUALCOMM INC 38
REALBIZ'S COM 60
RECORDING INDUSTRY ASSOCIATION OF AMERICA 4
RED HAT INC 16
REEBOK INTERNATIONAL LTD 46
RESEARCH IN MOTION LTD 52
ROBERT FRANCES GROUP 60
RUSSELL REYNOLDS ASSOCIATES INC 38
SABRE HOLDINGS CORP 1 16
SAMUEL BERT ASSOCIATES INC 14
SCIENT CORP 38
SCOUR COM 4
SDL INC 75
SECURITIES AND EXCHANGE COMMISSION 21
SIERRA ATLANTIC INC 6
SILICON GRAPHICS INC 16 38
SILVERSTREAM SOFTWARE INC 60
SKYTEL COMMUNICATIONS INC 44
SMARTWORKS COM INC 60
SPECTRUMSOFT CORP 21
SPRINT CORP 38 60
SPRINT PCS GROUP 16
SUMMIT STRATEGIES INC 12 56
SUN MICROSYSTEMS INC 30 21 38 57 60
SYMANTEC CORP 6
SYMBOL TECHNOLOGIES INC 21
TARGET CORP 1
TECHNICON BOOKS 62
TESSELL COM INC 21
TEXAS INSTRUMENTS INC 44
THE COCA-COLA CO 44
THE DOW CHEMICAL CO 4
THE NATIONAL FEDERATION OF THE BLIND 6
THE ORIGINAL MONEY BAKES 4
THE COMPANY OF GEORGIA INC 6
THE SABRE GROUP HOLDINGS INC 47
THE STANDARD REGISTER CO 38
THE STRATEGIS GROUP INC 21
THE WALT DISNEY CO 6
THE YANKEE GROUP 6 62
TRICO SOFTWARE INC 34
TIME DOMAIN CORP 16
TIVOLI SYSTEMS INC 62
TOYSMART COM INC 6
TOYSRUS COM INC 6
TRANSACTION PROCESSING COUNCIL 62
TRAVELERS PROPERTY CASUALTY CORP 38
TRIBAL VOICE 16
TRUSTE 6
U.S. ARMY ENGINEER RESEARCH DEVELOPMENT CENTER 62
U.S. DEPARTMENT OF DEFENSE 21 62
U.S. DEPARTMENT OF THE TREASURY 14 30
U.S. FEDERAL TRADE COMMISSION 6 8
UNISYS CORP 37
UNITED AIR LINES INC 16
UNITED PARCEL SERVICE OF AMERICA INC 62
UNIS INTERNATIONAL 62
US WEST INC 16
USANIMATIONWORKS INC 30
VERISIGN INC 44
VERIZON WIRELESS 16
VERTICALNEY INC 14
VODAFONE AIRTOUCH PLC 21
VOICESTREAM WIRELESS CORP 21
WABASH DIAMOND CO 6
WAL-MART STORES INC 1 44
WARPSTEN CUM 4
WEBRIDGE INC 38
WIRELESS INTERNET AND MOBILE COMPUTING 60
WIRELESS KNOWLEDGE LLC 44
WYSE TECHNOLOGY INC 4
XCOM CORP 31
XCHANGING 34
YAHOO INC 6 15
YELLOW TRANSPORTATION LLC 20
ZONA RESEARCH INC 60
ZOOMIT CORP 30

Continued from page 1

Travel Industry

market dominance; the push for making information available on wireless devices; and frenzied efforts to update aging green-screen systems.

The pace has two main drivers: freedom after Y2k, and e-commerce. "It was actually more complicated years ago, but the Internet made it so simple that everybody can do it," said Lorraine Sileo, an analyst at PhoCusWright Inc. in Sherman, Conn. "Now, everyone's racing to gain that next competitive edge."

Take Sabre Holdings Corp. in Fort Worth, Texas, for example. Y2k had caused a bottleneck of new technology projects, which the online reservation system attacked with gusto once the new year arrived, said Tom Klein, president of Sabre's e-commerce wing.

It now has a wireless booking tool, it's entered the Web hosting arena, and it has begun to experiment with chat windows that will link online customers to live operators if they have questions while trying to make a transaction.

"When it comes to e-commerce applications, we have more demand than we can fulfill for ourselves and our customers," said Klein, explaining that Sabre invested in Internet start-ups to get this technology. "We decided it made more sense to go outside and buy the technology rather than wait around and get passed by our competitors."

The interim president and CEO at Madrid-based Amadeus Global Travel Distribution LLC said firms are being forced toward innovation to keep their competitive advantage. "I would say it's both relatively and absolutely breakneck," said David Jones. "And you have to run harder all the time to stay ahead." Amadeus recently struck a partnership with Lotus Development Corp. to push its travel offerings over Lotus office desktop products.

Airlines have jumped on the bandwagon as well, racing to release wireless flight-status and -booking tools (see story, page 16). New rapid check-in kiosks are appearing in airports daily. And Atlanta-based Delta Air Lines Inc. and Northwest Airlines Inc. in St. Paul, Minn., are working to eliminate the dumb terminals used by their airport agents.

"We're going to have a channel that fits every customer segment," said Delta Senior Vice President Vince Caminiti. "We've got to be everywhere our customers are." (See related story, page 31.)

"I've never seen the pace like this," said Steve Jett, Northwest's manager of e-commerce marketing. "Right now, we just want to make sure when we partner with somebody, they've got the best possible technology that's known to the marketplace."

David Near, vice president for e-commerce at Galileo International Inc. in Rosemont, Ill., said the passenger name records that formed the cornerstone of reservation systems have become more valuable in a data-based economy. "Now, it's just a matter of figuring out how to use that data and push it to people," he said.

Yet all the innovation and entrances into new markets can put some of these companies in the odd position of competing against themselves. Sabre doesn't see that as a problem. "We will cannibalize ourselves before we let anyone else cannibalize us," vowed Pete Stevens, vice president of business and product development at Sabre Business Travel Solutions.

All the major players expect this high-tech version of *Survivor* to become more intense during the second half of the year and beyond.

Travel is the most lucrative e-commerce sector, said Henry Harteveldt, an analyst at Cambridge, Mass.-based Forrester Research Inc. His firm expects online travel to grow to more than $29 billion in 2003 from last year's level of $5 billion.

"The technology follows the money," he said.

AT A GLANCE

One Firm, Two Weeks, Lots of Movement

Technology upgrades and partnerships are coming at a record pace in the travel industry. Northwest Airlines is among the many rushing to push new applications to its customers. In July alone, it made substantial additions to its offerings:

July 12 Made flight status and frequent-flier information available to Sprint PCS customers.

July 13 Launched redesigned Web site in which nearly every feature is available in three or fewer mouse clicks.

July 17 Started Internet check-in program for passengers in Memphis.

July 24 Announced creation of an airline industry business-to-business e-commerce exchange with 10 other airlines.

Continued from page 1

Cell Phones

But the issue is a controversial one. While Carlo insists that the danger is real, the cell phone industry has disavowed his findings, and CIOs appear unfazed by warnings that have class-action lawyers salivating.

Carlo said that in his opinion, the general duty clause of the Occupational Safety and Health Act covers employer responsibility to ensure safe operation of cell phones.

"If I was a CIO or corporate IT manager, I would make sure my employees used them safely; they should all have a headset," said Carlo, chairman of Health Risk Management Group Inc., a public health research firm in Washington. Headsets allow the user to move the phone antenna away from the head, reducing radiation exposure, he said.

The potential health risks of cell phones have attracted the attention of the class-action bar, including Peter Angelos, an attorney who helped the state of Maryland in its lawsuit against the tobacco industry. Carlo said that Angelos offered to help fund his continuing research but that he refused the offer. "I don't want my findings used for litigation," Carlo said.

A spokesman for Angelos said, "We are reading materials [on cell phone health risks] released by scientists. We have no present plans for a lawsuit but cannot rule out that possibility at some point in time."

Companies contacted by *Computerworld* last week declined to discuss cell phone health risks. Dan Hubbard, a spokesman for Charles Schwab & Co. in San Francisco, said the brokerage is following the scientific studies but isn't "ready to take a position or to comment on it at this time."

First Publication

Carlo's concerns were given some credence with the publication today of one of his papers in a Web-based, peer-reviewed medical journal, *Medscape General Medicine* (*www.medscape.com/journal/MedGenMed*). The paper said radio frequency radiation from wireless phone antennae "appears to cause genetic damage in human blood," while another case study uncovered a "statistically significant increase" in neuro-epithelial brain tumors among cell phone users.

A spokesman for the Cellular Telephone Industry Association (CTIA) in Washington declined to comment on Carlo's studies, citing the lack of an opportunity to read them. But in an interview earlier this month, Joanne Basile, vice president of external and industry relations at the CTIA, said that the "vast majority of science does not show any adverse health effects from the use of cell phones."

Carlo said he parted company with the industry last year after it didn't enact any of his recommendations.

Other researchers question Carlo's methodology. Henry Lai, a researcher in the Bioelectromagnetics Research Laboratory at the University of Washington in Seattle, said he's "suspicious" of Carlo's conclusions because the epidemiologist hadn't published his data for peer review until this week.

In his own research, Lai said, he found preliminary evidence that cell phone radiation has an effect on animal cells. But the evidence is far from conclusive, he said. "It's alarming, but not really an indication that cell phone use can harm you or kill you," Lai said.

Carlo said he's also concerned about potential hazards from handheld computers and laptops equipped with short-range Bluetooth chips or wireless LAN cards.

A spokesman for the Utrecht, Netherlands-based Orinoco division of Murray Hill, N.J.-based Lucent Technologies Inc. dismissed that concern. "Most people don't use laptops on their laps," he said. "And with wireless LANs, most of your time is spent in 'receive,' rather than 'transmit,' mode."

Carlo said he believes that more research is required and should be conducted by an independent body.

A spokesman for the Occupational Safety and Health Administration said the agency does have a general duty clause that requires companies to ensure that their workers "are free from recognized hazards that are causing or likely to cause ... serious physical harm." However, the OSHA spokesman declined to say whether the clause applies to wireless devices.

AT A GLANCE

Just in Case

Recommended cell phone radiation precautions:

- Users should wear a headset and clip phone on belt so antenna is far from head.
- Buy a "hands-free" kit for your car and use an external antenna.
- The U.K. Ministry of Health warns against cell phone use by children.
- Pregnant women should use cell phones with caution.
- Check the radiation information the CTIA says must be in all cell phone boxes by fall.
- Buy a phone with the lowest possible radiation output.

SOURCES: WEALTH RISK MANAGEMENT GROUP, THE CTIA AND THE U.K. MINISTRY OF HEALTH

Periodical postage paid at Framingham, Mass., and other mailing offices. Posted under Canadian International Publication agreement #0095697. CANADIAN POSTMASTER: Please return undeliverable copy to PO Box 1632, Windsor, ON N9A 7C9. Computerworld (ISSN 0010-4841) is published every week except a single combined issue for the last week in December and the first week in January by Computerworld, Inc., 500 Old Connecticut Path, Box 9171, Framingham, Mass. 01701-9171. Copyright 2000 by Computerworld, Inc. All rights reserved. Computerworld can be purchased or microfilm and microfiche through University Microfilms Inc., 300 N. Zeeb Road, Ann Arbor, Mich. 48106. Computerworld is subject Bush issues, if available, may be purchased from the circulation department. Photocopy rights permission or photocopy for internal or personal use is granted to Computerworld, Inc. We authorize and other users registered with the Copyright Clearance Center (CCC), provided that the base fee of $3 per copy of the article, plus $.50 per page is paid directly to Copyright Clearance Center, 27 Congress St., Salem, Mass. 01970. Requests minimum 100 copies) and permission to reprint may be purchased from Ray Trybench, Computerworld Reprints, c/o Reprint Management Services, Corporate Corporate Center, 1911 Olde Homestead Lane, Lancaster, Pa., 17601 (717) 399-1900 ext. 124, Fax (717) 399-8900. Web site: www.reprints.com. E-mail: ray@reprints.com. Requests for missing issues will be honored only if received within 90 days of issue date. Subscription rates: $5 per copy U.S., $99 per year; Canada, $110 per year; Central & So. America $250 per year; Europe, $295 per year; all other countries, $290 per year. Subscriptions, call toll free (800) 552-4431. POSTMASTER: Send Form 3579 (Change of Address) to Computerworld, Box 2044, Marion, Ohio 43306.

FRANK HAYES/FRANKLY SPEAKING

Name that team!

DO YOU NAME YOUR TEAMS? Do you name the projects they work on? Do you spend time at the water cooler with the users on your teams? Do you have T-shirts or coffee mugs printed up with the project team's name and a slogan? Do you repeat your nicknames for the users on your team to their faces? Do you and your team's users all joke about management? Do you occasionally dig into your own pockets so everybody on the team — users and IT people alike — can have shirts that read, "We blew $2 million on The Project From Hell and all I got was this stupid shirt"?

And if you think that sounds like a lot of phony "morale-building" malarkey — well, where do you get off calling them "teams," anyhow?

Sitting around the same table with users doesn't make you all teammates. Reviewing the same specifications and agreeing on the same schedule isn't teamwork. Running a pilot and collecting user comments doesn't make you a team.

It's not a team until team loyalty and cohesiveness are at least as strong as the cultural and political ties that pull users and IT people apart. It's not a team until you're all committed to making the project work.

It's not a team until you trust each other.

That isn't as crazy as it sounds. Users — real users, the people who actually spend their days trying to get work done using the systems we build — want systems that work. So do programmers and network administrators — the people who build those systems and keep them running. There's common ground. Trust and teamwork aren't impossible.

But they aren't easy to achieve, either. A level up from users and developers on any team are bosses worrying about budgets, struggling for control and jockeying for leverage. All around the team are other users and IT people who may think those are two sides that shouldn't mix.

It's not a team until you're all committed to making the project work.



There's history and corporate culture that make real teams tough to build, politics and personal vendettas that make them difficult to keep together. *Us* and *them* are hard labels to overcome.

Which is where the team names, T-shirts and mugs come in. Sure, they sound like gimmicks. They *are* gimmicks. But they brand the people who get them as part of the team — a new group that's neither *us* nor *them*.

Besides, they're the cheapest part of building a team. Far more expensive in time and patience are the coffee breaks, the in-jokes, the process of getting to know your teammates' likes and dislikes, weaknesses and strengths — gaining their trust and learning to trust them.

Is all that necessary? Not for easy projects. Easy projects are, well, easy. We don't need user/IT teams for them — though they're a good place to get practice at team building.

But face it, we don't get many easy projects these days. Everything seems to happen on shifting ground. The requirements change from week to week. The technology is perpetually in beta. The schedule's never long enough. And nobody's exactly sure what they're doing.

That's when you need users on your team. They're the ones who can tell you whether you're on the right track. They can give you a heads-up for those requirements changes and keep you from heading down blind alleys. They can give you confidence that you're building something useful, and provide real-world advice on making sure it'll pay for itself.

And they can tell you when you've screwed up — maybe giving you enough advance warning that you can recover without the problem escalating to the point where your boss and their boss butting heads in front of the CEO while the project goes down in flames.

And whose morale will *that* build? ◗

Hayes, Computerworld's staff columnist, has covered IT for more than 20 years. His e-mail address is frank_hayes@computerworld.com.

SHARK TANK

I'M MELTING Support pilot fish gets a user distress call – her computer won't boot. The fish notices the PC's case is deformed; he takes a screwdriver to it and discovers the motherboard is shot, too. What warped the case so badly? he asks. The user shrugs and shows the fish where she keeps the PC – right next to her space heater.

I WANT MY AOL The morning after a network firewall upgrade, a user complains that his PC is running slow and locking up. A support pilot fish swaps it for a new one. Twenty minutes later, the same user calls back, complaining that nothing works. Pilot fish checks out the applications – everything's working fine. Irate user then complains he can no longer connect to the Internet via AOL and demands his old PC back. You can surf via the company connection, fish tells him. "I need AOL to connect!" the user screams. Nobody else seems to need AOL to surf, the fish points out. User explodes, "Nobody else is surfing porn!"

MAKE MINE MUZAK Tech support fish asks for training on new enterprise apps, but boss nixes the idea: "Don't worry, we always get the unlimited phone support contract." After "many, many hours on hold trying to get through to various tech support departments," he makes a new request: "Can I get a speakerphone so I can do other things while sitting on hold?" "Right off the top," says the boss, "there doesn't seem to be a need . . ."

TWENTY-FIVE YEAR bank veteran (but spreadsheet newbie) calls support pilot fish, nearly hysterical. "I was typing my numbers, and I accidentally bumped my clicker thing. Then the whole screen went black and everything disappeared!" A moment's sleuthing revealed the cause: "Bumping" the mouse had selected all cells on the screen, turning them black, sighs the fish. Solution: click.

"PEOPLE PERSON" Human resources manager refuses hardware upgrades to his early-model 486 PC. One morning he calls tech support: A CD is stuck in his drive. I didn't think he *had* a CD-ROM drive in that relic, puzzles the pilot fish. He doesn't – but the fish does find a mangled CD stuck in the 5 1/4-in. floppy drive.

TAKING HIS TURN on the help desk, this pilot fish fields a call from a teacher having trouble with "too many icons on the desktop." Fish can't leave the desk, but offers to help if she'll send the system up for him to look at. Thirty minutes later the teacher shows up – with just the monitor in hand. Wisely, the fish stifles his explanation that he needs the rest of the PC, not the monitor, and follows her back to the classroom where she's teaching . . . computer science.

Help *me* out: **sharky@computerworld.com.** If your story prints, you get a sharp Shark T-shirt. And check out the daily feed at *computerworld.com/sharky.*

The 5th Wave



E-mail richtennant@the5thwave.com



sas

MISSION

Implement a secure e-business.

Things change. There's a golden opportunity to grow the business globally. Produce a new product line by collaborating with outside suppliers, partners and key customers. Objectives: Attract new customers. Corner the market. Increase revenues. Provide sensitive data while keeping it secure. The solution is Tivoli® SecureWay®— to let the right outsiders share applications and access critical corporate information. Create a true e-business and keep it safe and secure. With quick and affordable implementation. That's why leading businesses choose the award-winning Tivoli SecureWay solution from Tivoli Systems Inc., an IBM company. Mission accomplished. 1-888-TIVOLI-1

www.tivoli.com/security



Tivoli

Manage. Anything. Anywhere.™